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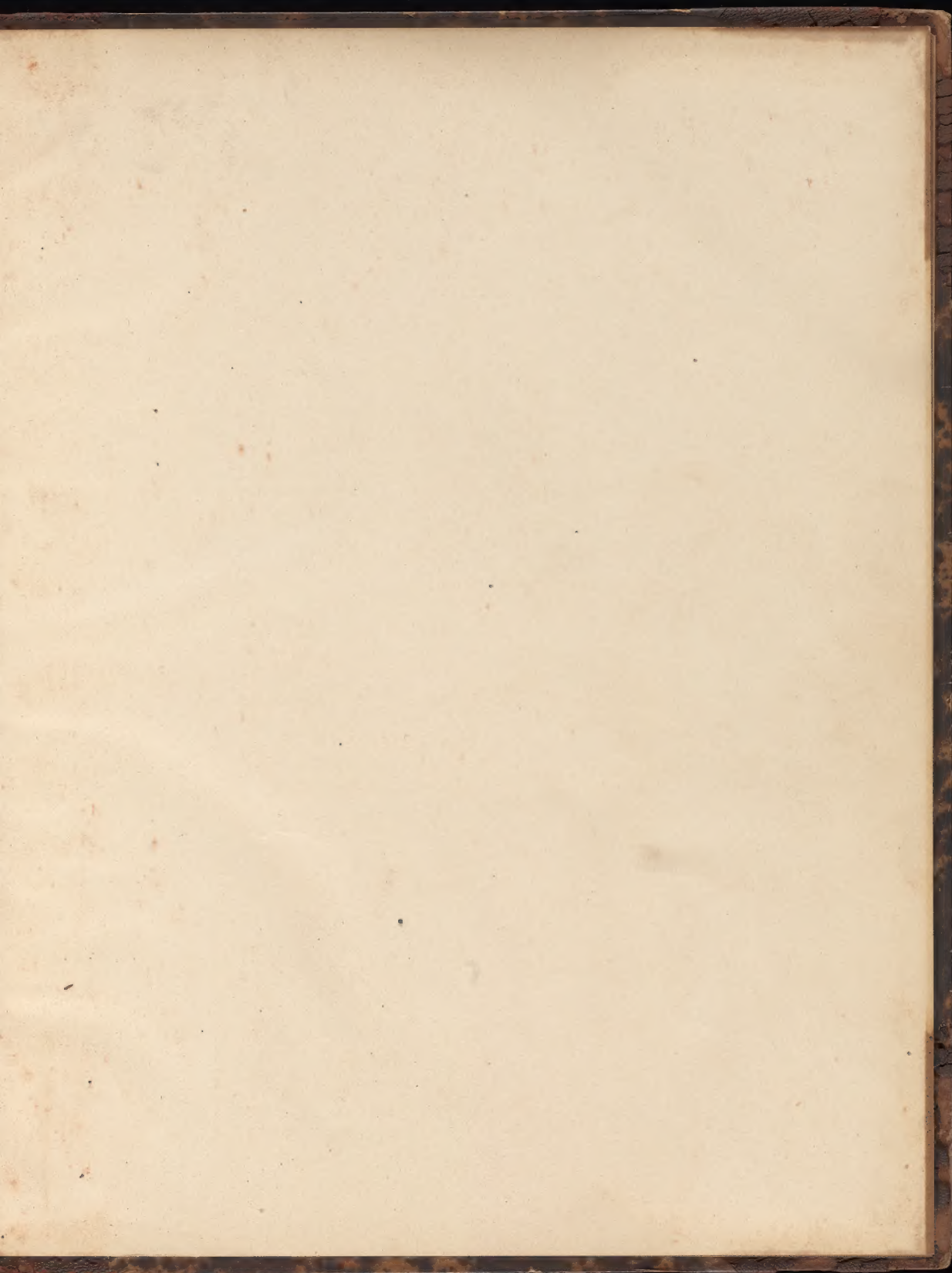
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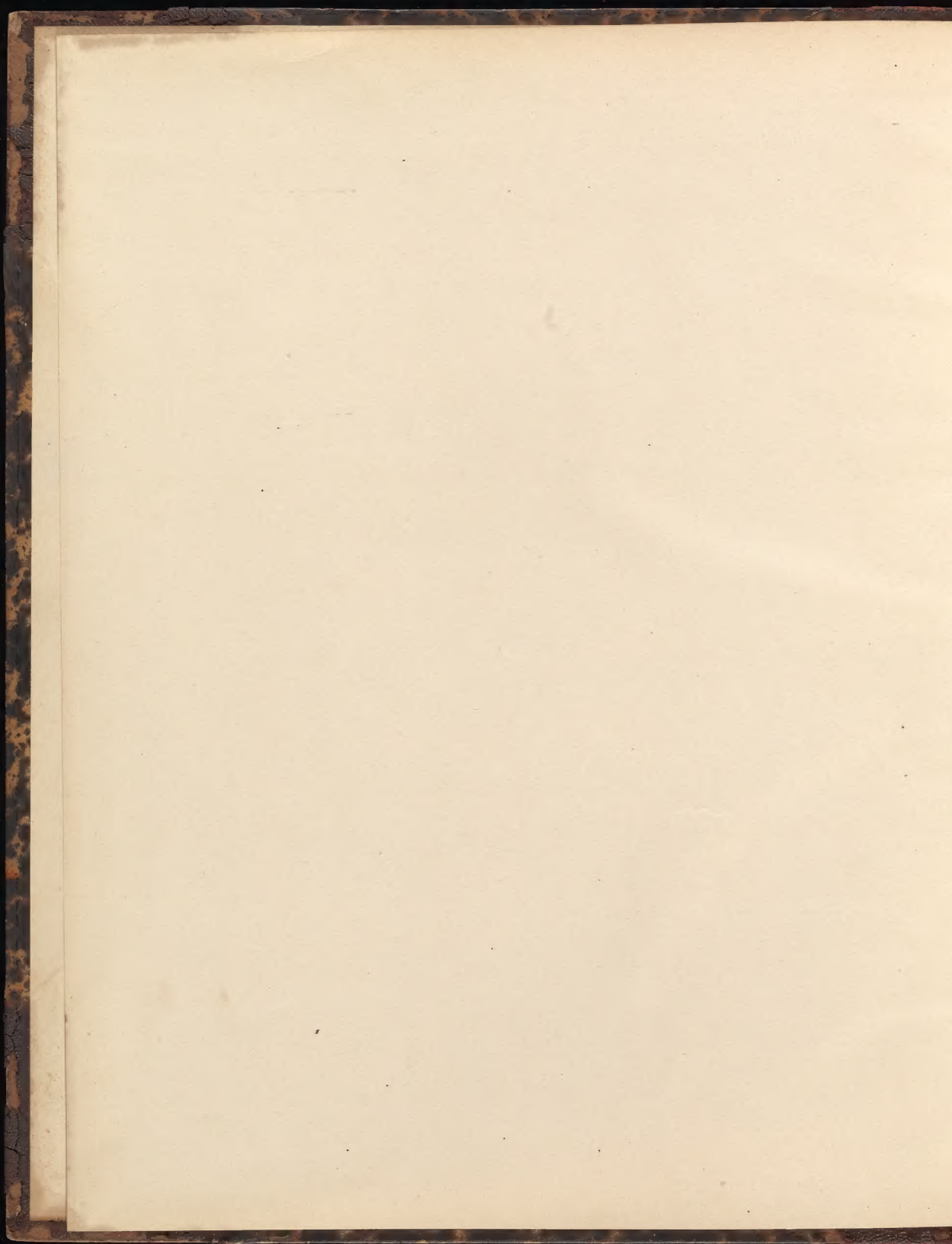
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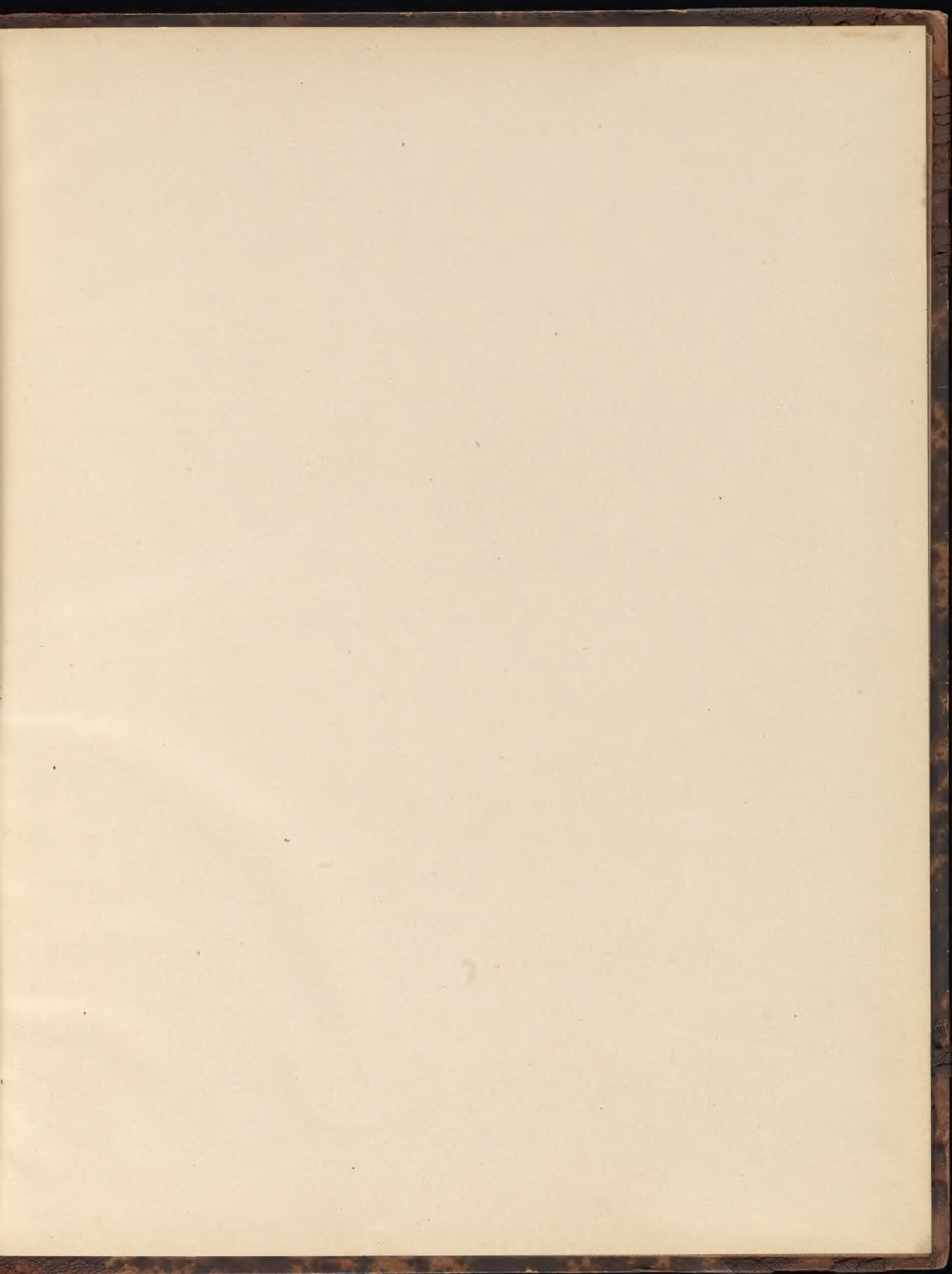
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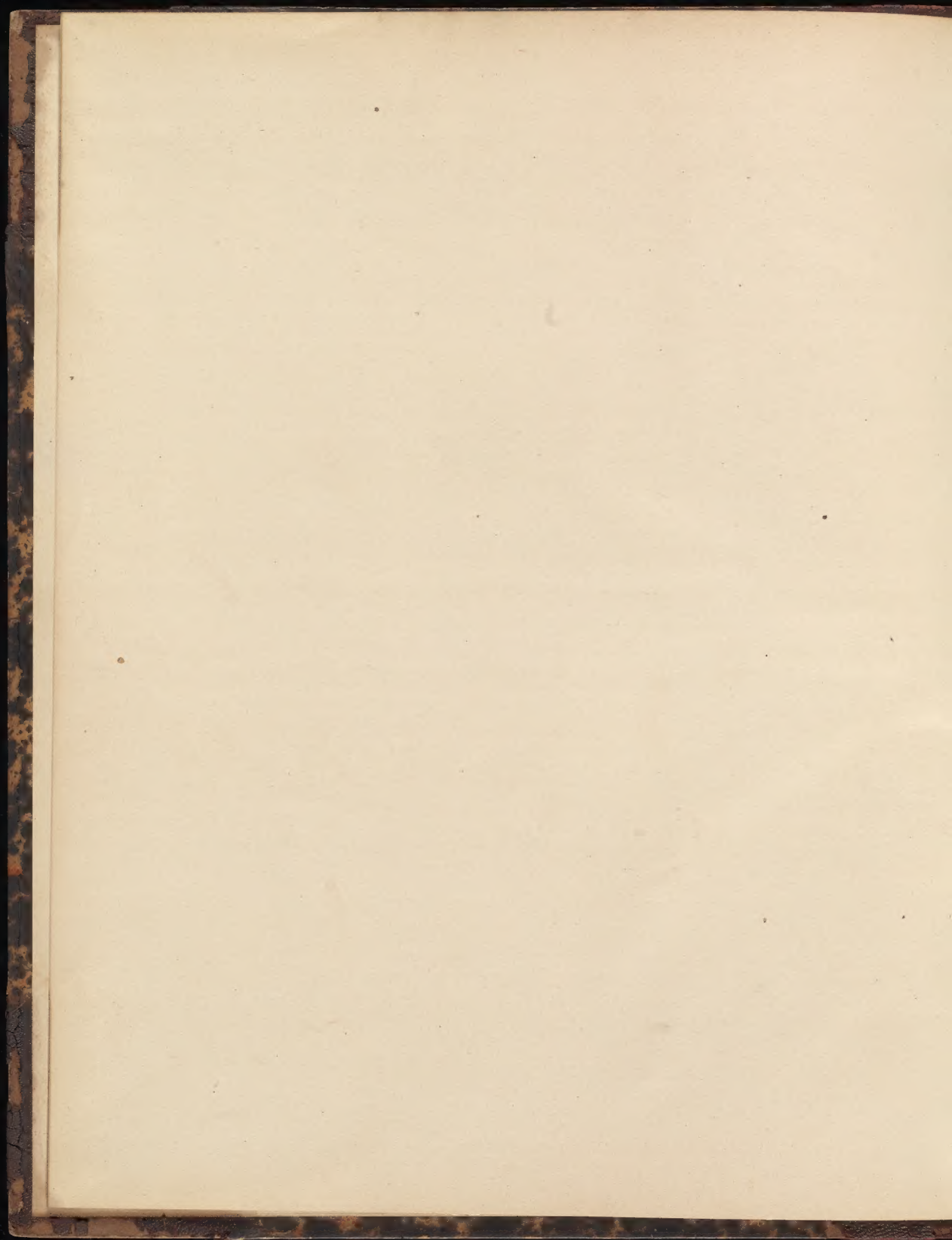














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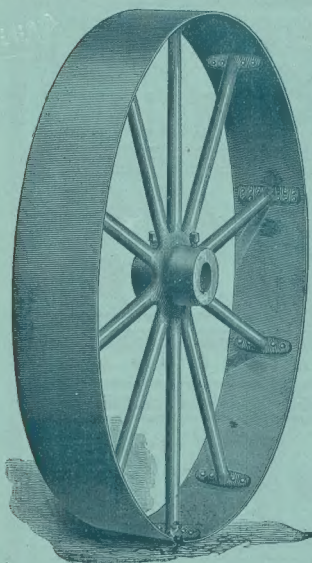
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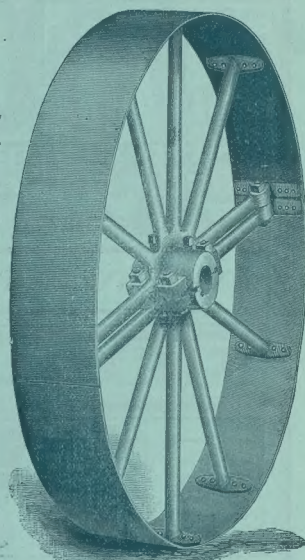
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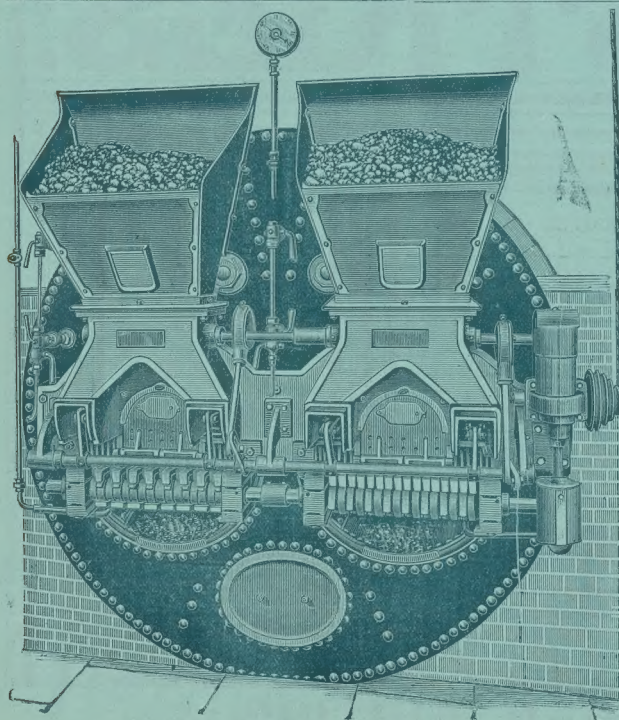
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# The Journal of Fabrics

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### Figured Serges.

Figured serges seem, at the present time, to be enjoying very great popularity, probably, from various causes. The ordinary worsted coating cannot be said to be very serviceable for every-day wear, especially those made from what are commonly called "corkscrew designs," &c., where, from the interlacing of the pattern, the cloth has a tendency to become hard and feel papery, and, as a natural consequence, to glaze by friction in wearing. Naturally, manufacturers and designers have turned their attention to the production of fabrics which will combine good wearing qualities with a dressy appearance. Serges seem to fulfil this purpose satisfactorily; even the ordinary twilled cloths, when the face is very evenly raised, always look well, the raising giving the twill a beautiful indefiniteness which cannot be equalled in appearance by any of the clean face finished goods made from worsted. They have somewhat the appearance of woollen cloths, without the tendency to shrink on being wet, which fault naturally accompanies this class of production particularly. On the other hand, patterns of a figured character are peculiarly adapted to this kind of cloth, especially those made after the manner of damask, as they give an appearance of alternate stripes or checks, one portion of which is raised above the other.

For the plain twilled kinds, the following are good cloths for the various weights:—

2/16's worsted warp, 40 ends per inch.

2/14's " weft, 38 picks

Woven 6 end twill, 3 weft, and 3 warp, this would be 21½ ozs. finished.

A cloth made from 2/26's worsted warp, 72 ends per inch, and 16's worsted weft, woven with 72 picks per inch, would be a very much finer and lighter cloth, the weight being 15½ ozs. finished.

These will be good examples of the kind of cloth to aim at. Of course, they can be varied to suit other weights than those given, care being taken not to have them too crowded with ends and picks, so that there is a difficulty in getting in the material, or the cloth will have a tendency to become hard, and thus one object in view, viz., that of producing a nice handling and firm fabric, will be defeated. These cloths can be ornamented by introducing small stripe patterns after the style of No. 1, with good effects, or the use of an occasional thread of mohair, or a combination of mohair and

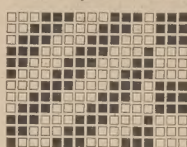


Fig. 1.

worsted twisted, or loop, or knop, yarns will give good results, these being the same colour as the warp; but, when these yarns are introduced, they should be so woven in that the knop or loop does not stand out very prominently from the cloth, or there will be a difficulty in the raising, as the knops might very easily be disturbed. Again, some nice styles may be produced by the use of colours of a very sombre character, as the operation of raising would blend the fibres in a very pleasing manner.

Fig. 2 is an example of figuring which gives very good results. Here we have a pattern where two twills of different sizes are joined in stripe form, the larger twill being made up of an ordinary twill and a small figure alternately: this gives the appearance of a crape in stripes, and, when made with a warp consisting of threads of black and dark blue twisted together, is very pleasing. Another kind of pattern which is effective in this class of cloth is that shown in Fig. 3. The pattern is simply a diagonal, composed of different sizes of lines. This will show in the cloth as a fancy diagonal, and the warp, being slightly coloured, will add to its effect, owing to the warp and weft lines not being equal to each other. A good cloth for the above patterns will be—48 ends per inch, 2/20's worsted, black and blue twisted together; 52 picks per inch, 2/24's worsted, making a 17 oz. cloth.

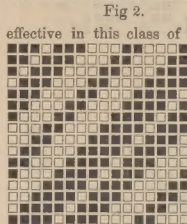
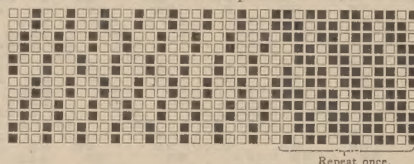


Fig. 2.

Other kinds of pattern adapted to this class of cloth are those shown in Figs. 4 and 5. Fig. 4 is made up of a 6 end twill, 2 weft and 4 warp, alternated in stripe form with its opposite twill, 2 warp and 4 weft; but this twill is allowed to advance two picks at a time, thus causing two



Repeat once.

Fig. 4.

picks to work alike, but this is broken by allowing the other twill to fall in such relation to it at the point of junction of the two stripes that the two picks which work alike in one stripe are crossed by the two picks which work alike in the other portion. By this method of arranging stripes, we reduce very considerably the number of healds upon which the pattern can be woven. In this pattern, though we have the effect of a six end twill, we can draft it upon three healds, thereby having a greater scope for the production of checks by introducing cords, &c. Fig. 5 is a check pattern, made similar to Fig. 4. Here we have a cord

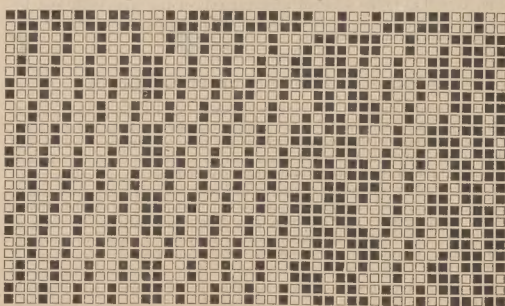


Fig. 5.



running up the centre of the first stripe, while the latter portion of the pattern consists of alternate stripes of warp and weft twill. Then we have two picks running the way of the weft to complete the check. These are so arranged that they will effectually break the continuation of the twill, and also give an appearance of a broken cord. A suitable cloth for the above two patterns, for a 17 oz. cloth, would be  $2/36$ 's worsted warp, 76 ends per inch, and  $2/30$ 's worsted weft, 80 picks per inch.

Fig. 6 is an ordinary six end twill, arranged in alternate stripes of warp and weft twill. This would produce a very good imitation of damask work, the warp twill standing out in relief against the weft twill. Fig. 7 is the same kind of pattern, with a cord running up the centre of each stripe. Fig. 8 is again made up similar to Figs. 6 and 7, but in the form of a check. Here the designer has plenty of scope for the arrangement of patterns, as the form of the

cords will very materially affect the appearance. We have shown several kinds of patterns which will produce good results as figured serges, though we have by no means exhausted the resources which the

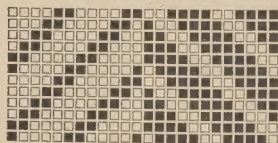


Fig. 6.

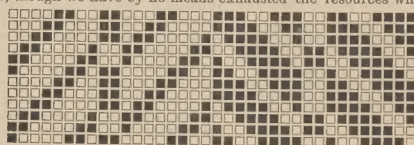


Fig. 7.

designer has to draw from. We have not touched upon the satins and twills having a satin base for their arrangements. The much used five end satin is very applicable to this style of design, as it readily lends itself to the production of both stripes and checks, while it, at the same

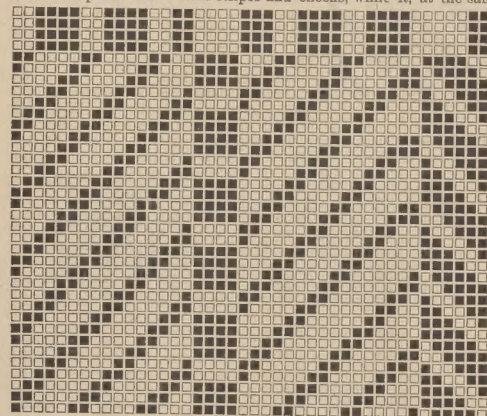


Fig. 8.

Repeat once.

time, permits sufficient material to be got into the cloth to allow of a good weight being made. Again, the designer might, with advantage, resort to the formation of pattern by using different twills in stripe and check form, as well as to the different arrangements of the same twill, and, by a judicious building of the cloth to suit the patterns, he can at all times produce new and novel effects.

### Fancy Effects in Cotton Dress Goods.

Very many fancy effects may be obtained by the use of the leno or gauze system of weaving for the higher classes of cotton dress goods. They are generally introduced into fabrics containing stripes of colour, but having the gauze effect as the main feature. Stripes may be produced running through the fabric, having the leno shown as open work, in plain colours, or fancy threads, working in different manners, also as a heavy thread crossing and recrossing between two lines of colour on the ground of the fabric itself. In this case, the open work will not be formed. These two effects are mentioned because they will be used to illustrate the method of producing the weaves. They are by no means limited to these two kinds, but may be varied in many ways, producing novel styles, and the number of designs capable of being made is unlimited. The principles involved in the construction of the fabrics differ from ordinary weaving, that is, in so far as the gauze part itself is

concerned. In ordinary weaving, the threads are arranged so as to run by the side of each other, or parallel to each other, but we find that in leno weaving there is a great difference—one thread wraps or twists around another thread, thereby forming a loop. This, of course, would involve a crossing of the threads, which is contrary to all rules in ordinary weaving. The method of performing this work is mainly mechanical, being done by the "doup." The threads in the warp used for the gauze effects must be considered as pairs. The thread used for douping is called the "doup" or "whip" thread, and the other, the thread around which the doup thread works, is called the "stationary" or "standard" thread. These pairs are not limited to one each of the doup and stationary threads. We may have pairs consisting of two doup threads and one stationary thread, two douns and two stationary threads, or one doup thread and three stationary threads, which are regulated by the effect desired. For the sake of convenience, the harnesses may be considered as being in two sets. The first set, called the ground set, contains the warp threads for douping, and also those intended to form the plain effect in the fabric, in fact, it

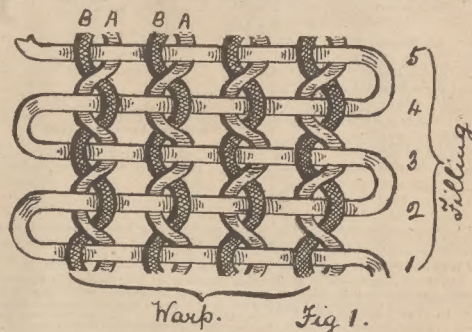


Fig. 1.

may be said that the entire warp must be drawn in the ground set. The second set consists of those harnesses used to produce the "leno" effect. They have the "douping" threads drawn on them through the douping heddle. The douping set consists of two harnesses, the first called "easer" or "skeleton" harness, has attached to it the loops of linen or silk, which are parts of the arrangement for producing the gauze; the second harness is the "standard." It has attached to it the heddles through which the loops or douns pass. These heddles are not constructed the same as the ordinary heddles. They are made with two eyes, or a similar arrangement, to answer the purpose required. One end of the douping cord is passed through one of the eyes of the standard heddle, looped, and is then passed back through the other eye, and the two ends are fastened to the "skeleton" harness. In drawing in the warp, it must be first drawn in the ground set of harnesses, and then, taking each pair, the "doup" thread is passed under its corresponding stationary thread, and is drawn through the loop formed by the douping cord passing from the lower to the upper eyes of the standard heddle. Hence it can be seen that it is necessary to know the effect desired before the weave can be made. Accordingly as the threads are twisted around each other, so must the drawing-in draft and weave be designed. If some threads twist more than others, they must be regulated to equalise the take-up, for those twisting the most would necessarily get much tighter, and the others, having less tension on them and being slack, would cause trouble in weaving. The number of harnesses required to produce the gauze effect is regulated by the difference in the twisting of the threads. If a thread douns in any required effect, it is drawn in a set of douping harnesses. If any thread douns differently from the first one, it must be placed on another set of douping harnesses. Hence, we may reduce this to the following rule:—Every thread douping differently must be placed on a new harness. To show the method of drawing in and drafting, the harness chain, Fig. 1, has been drawn. It represents an effect of plain gauze, A being the doup thread, and B the standard thread, the threads douping on every pick. It is the plainest gauze weave possible, being produced on two harnesses for the ground set, and two harnesses for the doup set. Each pair works alike, that is, A B work as one pair, and A' B' work as a pair, and in the same manner as A B, therefore, they may be drawn in one douping set of harnesses. Fig. 2 shows the complete drawing-in draft for the design. The warp is first drawn in the ground harnesses 3 and 4, then designating the 1st thread marked B' from the ground set as standard thread, we take the next thread to the right as the first doup thread (a). It is passed under the standard thread b and threaded through the doup har-



Fig. 2.



ness; it is now on the left side of the stationary thread b. The next doup thread is treated in the same manner, and so on through the entire gauze effect. To show the weaving, the harness chain, Fig. 3, has been designed. Looking at the design, Fig. 1, it is seen that the doup thread is raised over the pick on the right side of the stationary thread. This is done by the loosening of the loop, when the skeleton harness is raised, and also the ground harness holding the doup thread, the 4th. The next pick of Fig. 1 requires the doup thread to lift on the other side of the stationary thread, namely, the left side. This is done by raising the skeleton and the standard harnesses together; which brings the doup thread from the right side of the stationary thread to the left. Let us now take up one of the fancy effects that may be obtained by using this class of weaves.

Fig. 4 is a sketch of a fabric having a stripe produced by a very heavy fancy thread running in a zigzag direction through the fabric. This is done by using the gauze principle of weaving. As many of these fancy threads may be used as the designer wishes, for the number is not fixed definitely by the design, providing they all work alike. The ground effect shown in shading works on the plain weave, and the line in heavy shading on each side of the leno effect, are produced by several threads working as one interlacing with the filling on the plain weave. The shaded portion inside the leno effect included between the two heavy lines is the stationary threads, taken two threads as one, and working on the plain weave also. The fabric must be woven in the loom wrong side up. Fig. 3 represents the drawing-in draft for the gauze effect. A represents the four threads working alike to produce the effect A in Fig. 4. They are drawn on the 1st ground harness, the 3rd of Fig. 5. B is the draft for the leno effect corresponding to B in Fig. 4. It consists of the doup thread twisting around three double threads, therefore, these three threads must be considered as the stationary threads of the pair, although they work like the ground effect on the plain weaves. These three double threads, together with the doup thread, must be drawn in one dent of the reed. The centre thread of the three stationary warp threads interweaves with the filling the same as the effect A, therefore, it is drawn on the same harness. The outside threads work oppositely, and are placed on the next ground harness, the 4th harness of Fig. 5. Each doup thread shown in Fig. 5 as full



Fig. 4.

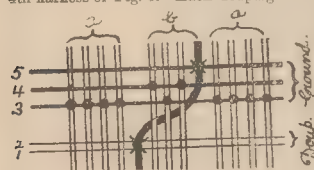


Fig. 5.

of the stationary threads to the left side, and then threaded through the loop in the doup thread. The weaving is done as shown in the weave Fig. 6. Picks 1, 2, 3, and 4 only interweave with the ground structure of the fabric, the doup thread floating beneath on the 5th pick; the doup thread rises to the top by raising the doup set of harnesses, therefore, the 1st and 2nd harnesses are up on the 5th pick. As the doup thread floats for four picks, it is well to bind it strongly, therefore, the doup set is raised for the 8th pick also. The 7th, 8th, 9th, and 10th picks interweave only with the ground structure on the plain weave; on the next pick, the 11th, the crossing of the doup thread takes place from the left to the right side of the fabric. This is effected by raising the 1st or skeleton harness and doup harness in the ground set, the 5th. The doup thread is raised also on the 12th pick. If a fine reed is used to produce the plain fabric, the spaces containing the doup threads must be specially prepared. This is done by removing the wires between the dents in the reed, as many being taken out as the required width of the zigzag effect necessitates. Fig. 7 represents an effect produced by the system of gauze weaving in which a stripe of open fancy effect is produced to alternate with a plain stripe of the fabric. It consists of three pairs (one doup and one stationary thread in each pair), working as one set, and three pairs working on another set. The open effect in the warp is

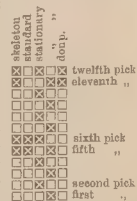


Fig. 6.

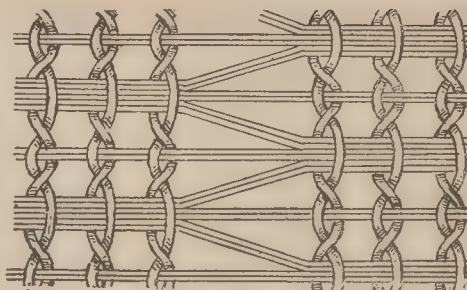


Fig. 7.

produced by the separation of the threads by the reed. The method of reeding for an effect like the above would be as follows:—The 1st pair is reeded in the 1st dent used for the effect. The next two dents of the reed are left empty. The 2nd pair is reeded in the next dent, then two more dents are missed, and the 3rd pair is reeded in the next dent. A wide space is left empty before the 2nd set is reeded, about six dents. The dent following the wide space left empty contains the 1st pair of the 2nd set, two dents are missed, and the 2nd pair is reeded in the next dent, two more dents left empty, and the 3rd pair is reeded in the next dent. If the open effect is desired wider, it can be done by repeating the two sets of doup threads, &c. Fig. 8 is the drawing-in draft for the leno effect. As these two

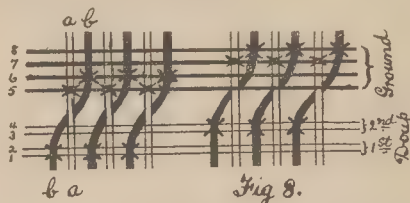


Fig. 8.

sets of doup threads interweave with the filling differently, they will each require a different set of doup thread. The warp is drawn in on four ground harness (the leno warp). The ground warp to produce the ground effect is drawn in on two harnesses to produce a plain weave. The first harness of the ground set contains the stationary threads a for the first set of doup threads. The next thread drawn on the second harness is the doup thread b. The third harness contains the stationary threads from the second set of doup threads. The fourth harness contains the doup threads from the second set of threads. The first set of doup thread has the doup thread from the first effect drawn in them, by passing each doup thread under its corresponding stationary thread and through the loop in the doup thread. As the second effect works in a different manner, they must have another set of doup harnesses, and the doup threads are drawn in them in the same manner as in the previous set. Fig. 9 shows the method of weaving the design, Fig. 7, according to the drawing-in draft, Fig. 8. Taking only the first set of doup threads, we see that the doup thread floats over the 1st and 2nd picks, to the left of the stationary thread; it is performed by raising the skeleton and standard harnesses, that is, the 1st and 2nd harness of Fig. 9. The doup thread of the 1st set floats over the next six picks on the right side of the stationary threads, therefore, the doup thread must twist around the stationary thread on the 3rd pick, and remain

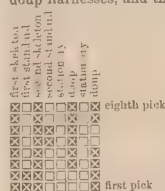


Fig. 9.

up for six picks. To do this, the skeleton harness and the ground harness controlling the doup thread must rise. That is, the 1st and 6th harnesses must be up on the 3rd, 4th, 5th, 6th, 7th and 8th picks. The second set has the doup thread up for four picks on the right side of the stationary thread, it requires the skeleton harness of the 2nd doup set to be raised, also the ground harness containing the doup threads, the 8th of Fig. 8. That is, in Fig. 9, we must raise the 3rd and 8th harnesses for four picks. On the 5th and 6th picks, the doup rises on the left side of the stationary thread, therefore, these two picks have the skeleton and standard harness raised on the 3rd and 4th harnesses of Fig. 9. The 7th and 8th picks show the doup threads to the right of the stationary threads. The doup thread must twist around the stationary thread by raising the skeleton and the ground harness con-

taining the doup threads, or the 3rd and 8th harnesses of Fig. 8. The operation is repeated alternately, and, by so doing, the threads twist to the right or left, thereby forcing the picks apart, and forming an open effect.

#### METHOD OF OUTLINING FIGURED EFFECTS IN LENO, USING ONE SET OF DOUPING HARNESSSES.

In the leno weaving previously mentioned, a set of douping harnesses, consisting of a skeleton and standard harnesses, must be used for each set of douping threads working differently. By the method to be explained here, this is not required, as only one set of douping harnesses may be used, although the leno may twist differently for any number of picks. Of course, the scope of weaving by this method is restricted, being limited to the following. Only one douping thread can be twisted around one stationary thread. Each pair of threads must either weave plain or doup on each pick. To illustrate this method—Suppose it is desired to make a design having the figure outlined in leno

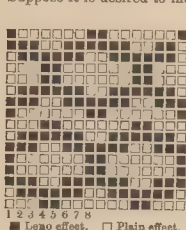


Fig. 10.

as shown in Fig. 10, it is required to do this, using only one set of douping harnesses. The warp is drawn in the same as for plain gauze, following the same method; drawing the threads first on a ground set of harnesses, taking the 1st harness for a douping thread, the 2nd harness for a stationary thread, the 3rd for a douping thread, the 4th for a stationary thread, &c., until all are drawn in on the number of harnesses required for the effect. The douping threads are to the left of the stationary threads; to draw them in, the douping harnesses pass under the stationary threads and draw through the loop, this brings the douping thread on the right side of the

stationary thread. To weave the fabric, the design must be constructed as shown in Fig. 11. As the blank squares in the motive, Fig. 10, are to have the warp and filling interweaving on the plain weave, the squares filled up have the warp and filling interweaving as "leno," the weaving must be done to correspond. Each square in the motive represents a pair, or one doup and one stationary thread, therefore, taking the 1st pick of Fig. 11, we have raised the 4th, 6th and 8th harnesses, as the motive calls for the first three pairs to work on the plain weave. The stationary threads are raised by these harnesses, and the douping threads of these three pairs are at rest, although the skeleton harness is up; this does not affect the douping threads, unless another harness through which they have been drawn is raised also. The next two spaces in the motive require the leno effect. As the skeleton is up, by raising the ground harnesses containing these douping threads, we make the doup threads twist from the right to the left side of the stationary threads. On the next pick, the 2nd, the skeleton harness is raised, also the standard harness, or the 1st and 2nd harnesses of Fig. 11. This brings all the doup threads up, and, at the same time, brings those

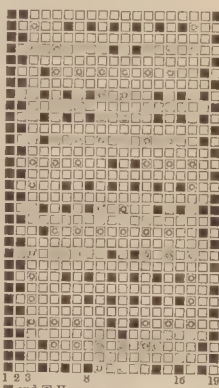


Fig. 11.

threads twisted to the left side of the stationary threads back to their normal position, thereby twisting the two threads as in regular leno. In the pairs working as a plain fabric, the plain weave has been produced, because, in the 1st pick, the stationary warp threads being the 2nd, 4th and 6th, are up, while the douping threads, 1st, 3rd and 5th, are down. And, on the next pick, the movement of the skeleton and standard harnesses bring up the 1st, 3rd and 5th warp threads (douping threads), while the 2nd, 4th and 6th threads remain down. This is the plain weave, one up, one down. On the second pick, that requiring the skeleton and standard harnesses to be up, the slackener must be worked; the weave, Fig. 11, has the 19th warp thread showing the picks on which the slackener must be operated, and it is raised on that pick. The succeeding squares of the motive are designed in the weave, Fig. 11, in the same manner, taking care to consider the squares as representing one pair. The greatest difficulty to be found in using this arrangement for producing leno effect would be that on every alternate pick the standard and the skeleton harnesses must be raised, although the design may not require any threads to be twisted on that pick. The great advantage to be gained by this method would be the reduction in the number of sets of douping harnesses. This method only requires one set, while the method pursued in ordinary leno requires one set of douping harness for every thread twisting differently.—Textile Record.

#### Novelties for the Winter Season, 1890-91.

Many difficulties are experienced each season by manufacturers in deciding in what form they shall produce their new fabrics, and, when this is decided, other difficulties arise in securing profitable orders for them. It is often found that those patterns upon which most faith was placed turn out thorough failures. They do not strike the taste or the requirements of the merchants, who have the success or failure of a pattern in their hands. Much could be written on this point, but we will let it pass. Producers are always on the look out to see what others are doing and this is, no doubt, one way of learning what the prevailing demand for any particular style or make of fabric is likely to be. This does not, however, hold good only so far as concerns their rivals in this country, but they are equally pleased to know what their competitors in other countries are doing. The Germans, for instance, sell a large quantity of fabrics in Britain, which they are able to do advantageously, not only on account of the lower wages paid and the longer hours worked, but also because they give particular attention to producing some of the most effective patterns, which they put upon the market in the most attractive form. The French also provide many novel effects which English manufacturers are always ready to see, as an evidence of which, take the large number of French patterns purchased each season from this office and from other French and English dealers. We are, however, not amongst those who are continually pointing out the great advance of other nations over our own country, as foreign manufacturers show just as much curiosity to learn what is being done in this. The French, the German, and the American, papers pay particular attention to English textile news in order to place the latest information, as to what is being done in England, before their readers. English patterns are sent to Germany, they are sent to America, and, to sum the matter up, each country looks to the others for ideas, and we in England quite hold our own amongst nations in the production of novelties in makes and patterns of fabrics, and a noteworthy feature is that we are generally first in the market. Speaking on German Trade, *Kuhlou's Gazette* says:—"The principal question is what stuffs will be used for overcoats, whether smooth or light rowed will take the lead. Our manufacturers have given themselves much trouble in the production of designs in soft, moss-like, velvet-like, and hairy, coatings, with thick woollen lining, and we thus meet with striped and mixed velveteens, small spotted Montagnacs and naps in the most varied executions. Notwithstanding, we are of the impression that Eskimos will again dominate next winter, and this opinion is shared by the majority of our wholesale dealers, with the result that they are not neglecting to give out pretty large orders for the last-named article. The fine brilliant Eskimo is very popular; in several of the new colours it appears plain, as milk chocolate brown, a new golden brown called "Tokay," and a not-too-dark marine blue, which has been very readily sold this winter. We notice, further, mixed Eskimos, Eskimos with fancy silk chinchilla threads, lined striped Eskimos, oblique and straight; but none of these will have the success of plain Eskimos. A new thing in cottons is the broad diagonal Cheviot, made with woven lining in striped or square patterns. In the same fashion are mixed Cheviots, diagonal-striped mixed with naps, and equally with woven lining. These stuffs, however, are more like Ulsters. In worsted yarn winter coatings, we notice very few novelties; there are diagonal striped chevron patterns with tolerably heavy wool lining, as, also, the fine diagonal striped corkscrews and fine diagonal striped piqués, in black and fashionable colours, but mostly in dark, plain, and mixed colours. These worsted yarn stuffs can hardly reckon upon a great success. The rest of the new overcoatings we have seen cannot lay claim to any particular recommendation. In colours, dark blue will be very largely worn; a very popular shade is formed by the so-called "cloth blue," which is somewhat lighter than marine blue. New are the above-mentioned milk chocolate colour and Tokay brown; chestnut brown also may still be bought. Blue gray and dark reseda are still selected for the cheap sorts in the Eskimos. In velveteens, black and dark blue are taken up, and, in Cheviots also, besides blue and brown, black is bought." In the Leipzig fashion report, the same authority says "designs for dress materials other than stripes, squares, and flowers, are desired, and a good many patterns are, therefore, again being made. The designers, who are largely employed on new designs, are taking up the large bombe patterns, which are of the size of a shilling and upwards; they differ from previously known designs, which, however, met with little attention, in that they are patterned in themselves. The new bombe designs consist no longer of a smooth surface, but of small stars, of undefined figures, and small peas set together, and divided in two or four colours dyed in suitable shades. The large bombe designs are made flamed or *ohne*, intermixing in several colours. The novelty consists in the size of the pattern; the smaller point patterns, which are seen, are not new. The fashion favours the large pastille designs, which we have just described. The woven pattern is edged round with silk lace stitch embroidery, embroidered star patterns being introduced in the large bombe designs. These bombe designs are extended in the forms of mail and oyster shells woven in the ground stuff. We have noticed a mignonette green mail pattern on a heliotrope-coloured ground. In the combination of suitable colours, the utmost possible is done for the attainment of surprising effects. We thus see pergamant



colour grounds with black; sparlike, broad stripes, and the *bombe* designs in heliotrope; further, old rose ground with Horse-neck-coloured *bombe* designs, and variegated, flamed, blue-gray ground ornamented with a white gray oyster shell design. These designs are furnished by Paris; they are not adapted to the taste of everyone, but those who do not care for common, every-day things will gladly turn to them. There is a good demand for coloured cloths, Cheviots, corkscrews and chevrons. Little is being done for the moment in waterproof mantle stuffs, nevertheless, the prospects are good, as, in consequence of the mild weather, the stocks in the shops have been reduced. Plain, diagonal-pattern, cloth Cheviots are being taken up for the great consumption. Large square plaids are to be circumspically handled. In silk stuffs, attention may, later, be concentrated on Siciliennes, regences, and peaux de soie, but, at present, little is bought. Cheviot trouserings will, this time, come into competition with those of worsted yarn, and according to all appearances the former will take the lead in the elegant and dear fashionable things, at least, Cheviots are more largely represented than worsted yarn in the collections of those manufacturers who devote themselves exclusively to the manufacture of novelties. Stripe designs appear in the Cheviot novelties; black and blue, black and gray, black and green Cheviot stripes alternate with each other. Combinations of gray with blue, and gray with green, are also very popular. The breadth of the stripes is one centimetre each, seldom more. They have plain and coloured burls. There are, further, burl stripes on a flaming ground, and plain Cheviots with coloured burls. These things, which are produced in excellent qualities, make a very pretty and pleasing impression. Still more, however, than the foregoing may be bought the covered square patterns in gray and brownish colours. Cheviot thread stuffs in pretty small square and fine stripe patterns should also be mentioned. Cheviots, whether of worsted yarn or carded yarn, have the best prospects for the coming winter selling time. The majority of the worsted yarn trousering novelties in semi and deep black tones have fine coloured silk stripes, which only differ from previous designs in that they are no longer placed close together, but are separated by spaces of 5-6 centimetres from each other. We have also seen diagonal stripes; large square patterns in pure wool thread enlivened by coloured silk; striped worsted yarn buckskins; fine thread worsted yarn stuffs with coloured stripe patterns and covered square patterns. Manufacturers have again attempted to surprise us with the so-called gallow trouserings, which have broad, coloured stripes inwoven at the sides, but, as was the case last year, this article will not have much popularity to boast of. We notice, further, the fine piqué-like stripes; a small coloured square pattern formed of fine silk threads and set closely together like mosaics; also burl designs executed on chevron worsted yarn stuffs find no buyers. Carded yarn trouserings are represented in the well-known thread Meltons, and in the rich selection of flame and burl yarn novelties. Here, also, one sees in the foreground, covered square patterns and stripe designs, which, in combination with burl effects, prevail everywhere in the trousering novelties for the coming winter season.

### New Patented Fabrics.

#### REVERSIBLE INGRAIN OR PRO-BRUSSELS CARPETS.

It is well known that a Brussels carpet has a pattern on one of its sides only, and the leading object of the patentees' invention is to make a pattern on both, so as to render the carpet reversible. In carrying out this idea, the pattern is formed by means of the warp instead of the weft, as hitherto, an ingrain woollen warp being used and operated upon by harness or a jacquard. A binding warp is also employed to bind the weft into the fabric and, if, for instance, the fabric to be woven be two-ply, the ingrain woollen or cotton pattern on the under and on the upper face of the fabric, according to the pattern being woven, three colours are shown on the fabric, two by the weft, and one by the ingrain warp, and, if the fabric be a three-ply carpet, with the addition of the ingrain warp thrown on each face of the fabric, then four colours will be imparted to the carpet, and so on, that is to say, by throwing the ingrain warp on both sides of the fabric, one more colour is given than the number of weft threads employed. Thus, the ingrain warp thread, employed as above set forth, produces a substantial pattern on both sides, making the carpet reversible, and this can be done whether the carpet be two, three, or other number of ply.

#### LINEN AND COTTON GOODS, WITH TRANSPARENT DESIGNS.

In white linen and cotton goods, or mixed linen and cotton goods, as at present manufactured, the design or pattern is only visible when the goods are so placed as to allow the light to fall on them, that is to say, by reflected light—such design becomes invisible when the goods are held up to the light, thereby rendering them unsuitable for many purposes to which they might be advantageously applied. The object of this invention is to manufacture or produce goods in which the design or pattern shall be transparent and rendered visible when held up to the light, thereby considerably enhancing their value, and rendering them suitable for a variety of purposes, and more particularly for use as window blinds. In carrying out the idea, the warp and weft threads forming the texture of the fabrics are so proportioned the one to the other, that one of them is composed of a heavier yarn than the

other, whereby the design or pattern produced by the lighter of such yarns becomes transparent, and allows the design to become visible when the materials are held up to the light. The proportions of the yarns composing the goods depend upon the quality and the nature of the fabrics to be produced. For those of medium quality, composed of cotton and linen, the following proportions will be found suitable:—The warp is formed of 40 twist cotton, and comprises 4,200 threads in 54 inches (77.7 threads to the inch). The weft is formed of 40 twist linen yarn, and comprises 64 threads to the inch, which latter may, if desirable, be slightly dyed. The fabrics are made by preference on what is known as a 1,800 Vincerzi Jacquard Loom, and, when they are thoroughly cleansed, the design or pattern can be clearly seen. When made of all cotton, the goods may afterwards be dyed to any desired shade. The patentee wishes it to be clearly understood that the above-mentioned proportions of yarns, as well as the nature of the material composing the same, may be varied to suit the requirements of the quality of goods to be produced. For instance, the goods may be composed wholly of linen, or wholly of cotton. It is only necessary that either the warp or weft shall be composed of a lighter yarn than the other.

#### DIAGONAL WOVEN FABRICS.

This invention applies to every kind of fabric woven in a loom, the object being to weave the materials in such a manner that they will answer the purposes for which, at the present time, fabrics, when being cut up for certain portions of wearing apparel, &c., are "cross-cut," that is where the piece of fabric has to be cut diagonally. In the usual way of weaving, threads of warp are vertical, and those of the weft horizontal, it follows that, in every woven fabric, three distinct directions are invariably noticed, that is to say (1), the longitudinal direction, in which the threads of the warp are placed; (2), the horizontal or transverse direction, in which the threads of the weft are connected with, or crossed by, the warp threads, and (3), the diagonal or oblique direction, at an angle of 45 deg. to the warp or weft thread. In the direction of the warp threads, the fabric also resists stretching, or lengthening, for the threads have already been subjected to a strong tensional strain at the moment when they were mounted upon the loom. In the direction of the breadth, the thread of the weft permits of only a slight amount of lengthening, or stretching, for it has been stretched upon the loom by the throw of the shuttle. It is in the diagonal or oblique direction that the fabric mainly possesses suppleness. When a strip of fabric is cut in this direction, the threads permit of stretching, and they can be more or less lengthened, according as the meshes of the fabric are more or less tightly woven, but they have no elasticity; they necessarily retain the position which has been given them after the stretching, because the threads of the warp have, in the fabric previously cut, the same length as the threads of the weft, they have, therefore, the same resistive strength, and, consequently, neutralise each other in the force exerted, in order to reoccupy the original position obtained at the time of the weaving. It often happens that a fabric is used after it has been cut obliquely, especially for making various parts of clothing, but, the use of a fabric thus cut obliquely is very limited, as only small parts of fabrics can be cut in the oblique direction, by reason of the inconvenience resulting from the breadth, the arrangement of the design, the direction of the pile, and the like. Accordingly, not a complete suit can be obtained by cutting the fabric diagonally, but only certain interior parts which are hidden from view. Now, in order to be able, in every case, to employ, in any form and width, the fabric cut in the diagonal direction, the weft is made to run diagonally with regard to the warp, and not at right angles to the warp as heretofore. For this purpose, the patentee has devised a loom which will enable this fabric to be woven diagonally. The general construction of this improved loom is the same as that of the looms heretofore used, but the comb and beater, instead of being perpendicular to the sides of the frame, are arranged obliquely, at an angle of 45 deg. The comb is displaced in the direction of the warp as heretofore, that is to say obliquely in this case. This movement is imparted by means of connecting rods actuated by the cranks of a shaft, which receives its motion from the main shaft through the medium of bevel wheels. If the teeth of the comb are made of strips, the latter are placed at an angle of 45 deg. in their frames. If the teeth of the comb consist of round steel wire, they are placed so far apart that the distance between them is proportionate to the obliquity which is desired, in order to obviate the friction between them and the thread of the fabric. The loom being thus mounted, its operation is effected as in other looms for weaving purposes. But the shuttle, instead of being caused to move at right angles to the warp, follows the oblique path of the comb. The weft left by it, therefore, forms a diagonal line relatively to the threads of the warp. The fabric being woven according to the above described manner, each mesh of the fabric represents a diamond or rhombus, instead of a square, and the threads of the weft are in the diagonal direction, instead of being, as in other fabrics, in a horizontal direction. Accordingly, the whole fabric is woven obliquely. The patentee claims that fabrics woven in this manner are remarkable for their suppleness, elasticity, strength, and that they can be torn only with difficulty, and will not show any signs of wear in the places which are much used. The fabric offers special facilities for upholstering furniture, and for carriage hoods, and, it is admirably adapted for the manufacture of billiard cloth, boat sails, and for numerous other purposes.



## ORIGINAL DESIGNS.

On our first plate, we give a design for a Tapestry Table Cover. This is also suitable for a Scotch Carpet, and for other uses which will be easily suggested to manufacturers.

On our second is a design for a Linen Table Cloth, arranged as part of the design given on our third plate.

The third plate contains a pattern for a Border for a Linen Table Cloth. It has been drawn by Mr. C. W. Sandiforth, 103, Race-common Road, Barnsley.



## MONTHLY TRADE REPORTS.

**WOOL.**—A rather quieter feeling has prevailed in the wool trade, but still there has been a large consumptive demand for nearly all classes. English descriptions have declined a shade in value, but, at the close of the month, were decidedly firm at the reduction. Colonial classes have shown no variation. The yarn trade has been generally cheerful, and production recently has been heavy. Spinners have refused new contracts, in most cases, unless firm rates have been offered. Orders on hand will carry them well into the year 1890, and they are very hopeful of business continuing good for some time. The piece trade has, on the whole, been fairly satisfactory, although a quieter tone has recently prevailed. Manufacturers have moderately good orders in hand, and expect an early addition to them, at firm rates.

**COTTON.**—Spinners and manufacturers have been fairly well engaged during the past month, and considerable business has been done. Operations have been rather difficult to bring to a head, owing to sellers asking higher rates, still, on the whole, trade has been fairly satisfactory. In the yarn branches, prices have ruled very firm, and the demand for most descriptions, where a slight concession has been made, has been good. The home branches have kept up, but the trade with China and Japan has only been quiet. The sales of cloth, although not extensive, have ruled fair, and numerous orders might have been taken if lower rates had been accepted. For India, some moderate orders have been placed, but inquiries for China and Japan have mostly fallen off.

**WOOLLEN.**—In this industry, nearly all branches have kept busy, and the volume of business done, has been large. Of course, there were exceptions, but taking these into account, the woollen trade was never in as healthy a state as at the present time, and, judging by the large number of orders in the hands of manufacturers, they will remain busy for some time to come. In the various classes of worsteds and woolsens, the new patterns of which have been brought out recently, good contracts have been taken, as well as repeat orders for former patterns. The orders taken were not only for home account, but also largely for Canada, United States, Australia, the Continent, and Brazil. Prices for nearly all descriptions of cloths keep very firm.

**LINEN.**—The trade in table linens has shown no signs of improvement but, with this exception, there has been a more cheerful tone in the linen industry. In sheetings, and bed linen generally, an improved state of things has been apparent, and the same may be said of domestic fabrics, such as towellings, tea, pantry, and other cloths. Diapers, drabnets, and floor-linens have been rather quiet, still, a fair business has been done in these descriptions. On the whole, improved sales have been made during 1889, when compared with former years, and the outlook for the new year is cheerful.

**LACE.**—There has been a slight improvement noticed in this branch of industry, and, commencing at the latter end of the year, it augurs of better things for the lace trade. In the millinery departments more has been doing, and as many varieties of a new class have been put upon the market, it has given an impetus to the trade. Large orders for curtains are on hand, and good employment is assured for some little time to come. Makers of cotton nets have been fairly busy, but for bobbin nets the demand has ruled quieter. Laces of the antique class have met with much favour. Prices generally have been rather harder.

The Steam-worked Cotton Mills of Salonica were actively engaged in executing orders received during the year. The two cotton mills in the town, which are managed by Englishmen, are earning at the rate of 25 per cent. per annum on the capital invested in them. The Turkish Government, with a view to foster this industry, has exempted its products from the internal custom-house duty of 8 per cent. ad valorem, which is levied on all native goods exported from one Turkish port to another, and it has recently extended this boon to all other cotton and woollen goods, which are manufactured in this country.

## Potash Soaps.—Finisher Makes His Own Soaps.

(Continued from Page 65.)

It is most evident that adulterations are so common and so numerous in the manufacture of soaps that it is often difficult to tell just the extent to which we are being imposed upon until the result is shown in the final comparisons of labour and expense. It is often exceedingly hard to state the extent of the impurities present, and especially is this the case when soda is the adulterant in use. The only safe and sure method to be adopted in this matter is for the finisher to make his own soaps from only the purest stocks, and then he will know for a certainty just what he is using and how his work is going to turn out. And hence, from what we have seen above, and from what the experience of each will surely teach, it seems as though there were only two courses open to every finisher. In the first place, he must be absolutely certain that he is purchasing a soap which is always pure and uniform and which can be implicitly relied upon for these two necessary qualities, which naturally means the payment of a higher price than is consistent with true economy or, secondly, he must make his own soap. As regards the prices of home made soaps, we might enter into a few estimates that will give a slight idea what can be done in the line of money saving by making our own soaps. In the receipt for soda soap, there were 150 pounds of tallow, 20 pounds of caustic soda, and 90 pounds of water; the tallow at seven cents and the soda at six cents will give about 260 pounds of a first-class soap for 11.70 dols., or at the rate of 4½ cents per pound. A good economy soap could be made from 120 pounds of tallow and 20 pounds of soda, at a cost not exceeding four cents per pound. If cottonseed oil, palm or cocoanut oils are used, instead of tallow, then, of course, the price would vary somewhat from the figures above. A good palm oil soap could be made from 3 to 3½ cents a pound. The figures quoted above are merely approximations, and the expense of labour or making is not taken into account; more than this, the prices will necessarily fluctuate with the market, and will differ considerably in different localities. It is evident that by far the greater part of the expense of the soap lies in the tallow or oils used, and, since resin and silicate of soda can be used instead of tallow, and at so much lower figures, we have this fact to look to as the reason why we are so much in danger of getting an adulterated article when we buy already prepared soaps. As to the potash soap, we will take again the receipt above given and figure out the cost. The receipt was 180 pounds of cottonseed oil, 20 pounds of tallow, 50 pounds of caustic potash, and 50 pounds of water. The oil at five cents, the tallow at seven cents, and the potash at nine cents will bring our 300 pounds of soap to 14.90 dols., or about five cents per pound. This soap may be made more fit for scouring purposes by the addition of water, thus rendering it more like the crown soaps of commerce, and cheapening the cost of its manufacture—one pound of water to three pounds of soap and then add a little pearlash when using, say one pound of pearlash to 20 pounds of soap. For scouring in the finishing department, it is best to remelt the soap made from the above receipt, and to add the water either with or without the pearlash. It is almost necessary that this course should be pursued, as it sometimes happens that there is a trace of the oil, in the concentrated soap, which remains unsaponified, and which would give to the goods an oily and unnatural smell which could not afterwards be entirely removed. But, by thus remelting, every trace of the oil is saponified, and all danger is avoided, thus greatly cheapening the soap, and, at the same time, rendering it more fit for use. This, in fact, is the great defect in potash soaps as they are manufactured and sold—they contain too much free or unsaponified alkali. The caustic potash used in the lye is not pure, and, when the lye is combined with the oils and tallows, all these impurities, together with a considerable amount of the free alkali, must remain in the composition of the soap, as there is no such means of purification as in the case of hard soaps. But, when a pure potash is obtained and used, such as can now be purchased in some markets, we can be sure of getting a pure and neutral potash soap which cannot, if properly made, affect either fibre or colours. Potash soap is much more soluble than soda soap and, therefore, it penetrates the goods more quickly, and is more effective in the removal of the grease and dirt. Potash, moreover, is not so apt to affect the delicate colours and shades, since the action of potash on both vegetable and animal fibres is so much more gentle than is that of soda. Again, potash soap is preferable from the fact that it imparts a soft or silky appearance to the wool fibres, and has none of the harsh and unpleasant effects of soda and of soda soaps.

The *National Zeitung of Bale* states that the manufacture of ribbons, the chief trade of the town, has been for some time in a torpid condition, as well as the industries allied with it, as, for example, dyeing.

According to a despatch from Sir F. Denys, H.M. Chargé of Affairs in Mexico, a company has been recently organised in that country, in which the President takes a great interest, to promote the cultivation of the ramie plant, and is about to make large purchases of machinery for the preparation of the fibre. It is stated that the plant can be profitably produced in every State of Mexico, and that from three to five healthy crops can be obtained annually, while its cultivation will give greater profits than cotton, sugar, or the cereals. It is believed that the growing demand for the fibre will keep pace with any possible increase of production, as it is taking the place, to some extent, of cotton, linen, and other textiles, in the fabrication of many kinds of goods.



THE JOURNAL OF FABRICS AND TEXTILE INDUSTRIES.

10th JANUARY 1901.



TABLE COVER.



# RODGERS' PULLEYS

(REGISTERED.)

WROUGHT IRON THROUGHOUT, RIM, ARMS & BOSS.

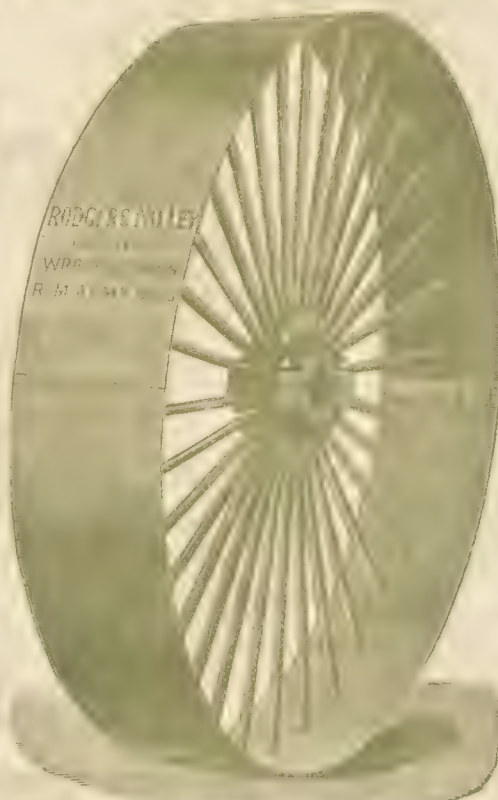
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THE JOURNAL OF FABRICS AND TEXTILE INDUSTRIES.

12TH JANUARY 1902.



LINEN DAMASK TABLE COVER.





LINEN TABLE COVER BORDER.





## FASHIONABLE \* DESIGNS.

\* \* \* \* \* A Supplement, containing Woven Specimens of the Designs given on this page, is presented each month to those of our Subscribers who manufacture Cloth for Ladies' and Gentlemen's wear.

Ours was the first Journal in this country to give woven samples of various descriptions of fabrics regularly each month, and since we commenced this feature, some years ago, it has, to some extent, been adopted by others. In matters connected with every branch of designing, we stand ahead of all other Journals.

## No. 618.



Design.

## Trouserings.

Warp:—  
4 ends Black.  
1 end Light Brown.  
1 " Grey.  
2 ends White.  
2 " Light Brown.  
2 " White.  
4 " Dark Brown.  
1 end Red and Black.  
1 " Light Brown.  
2 ends White.  
2 " Light Brown.  
2 " White.  
2 " Light Brown.  
2 " White.

West:—  
3 picks Light Brown.  
1 pick Black.  
4 picks in pattern.

1,680 ends in warp;  
26 ends per inch; 64  
reed, 4 ends in a reed;  
20 picks per inch; 64  
inches wide in loom; 56  
inches wide when finished.  
26½ oz. cloth.

28 ends in pattern.

Warp and west all 2/16 skeins.

## No. 619.



Design.

Warp:—  
2 ends Twist,  
2 " Black,  
1 end Twist,  
2 ends Black,  
1 end Twist,  
2 ends Black,  
2 " Twist,  
9 " Black,

9 skeins woollen.  
" "  
" "  
" "  
" "  
" "  
" "  
" "

21 ends in pattern. West, 11 skeins woollen.

1,792 ends in warp; 28 ends per inch; 36 picks per  
inch; 7's reed, 4 ends in a reed; 64 inches wide in the loom;  
56 inches wide when finished. 24 oz. cloth.

## Suiting or Mantle Cloth.

## No. 620.



Design.

Warp:—  
6 ends Black,  
1 end Red and Brown,  
1 " Brown and White,  
1 " Red and Green,  
1 " Brown and White,  
1 " Red and Brown,  
1 " Brown and White,

15 skeins.  
" "  
" "  
" "  
" "  
" "  
" "

19 ends in pattern.

West:—6 picks Black,  
6 " Black and White,

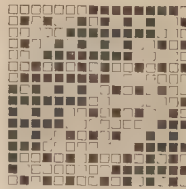
14 skeins.  
" "

12 picks in pattern.

2,128 ends in warp; 34 ends per inch; 32 picks per inch;  
8½ reed, 4 ends in a reed; 63 inches wide in the loom; 56  
inches wide when finished. 17 oz. cloth.

## Worsted Overcoating.

## No. 621.



Design.

## Warp:—

2 ends Brown, 2/10's worsted.  
2 " Blue, "

4 ends in pattern.

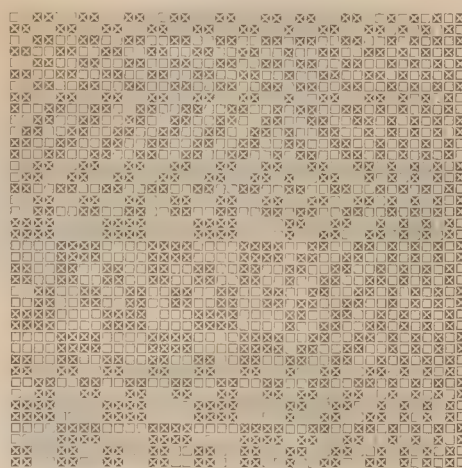
West:—Blue, 2/9's worsted.

2,240 ends in warp; 35 ends per  
inch; 35 picks per inch; 8½ reed, 4  
ends in a reed; 64 inches wide in  
loom; 56 inches wide when finished.  
27 oz. cloth.

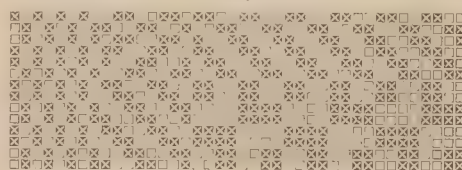
## Cotton Dress Goods.

This design is given for Cotton Dress Goods, and will  
make a neat pattern. The warp and west are 2/36's; 45's sett;  
50 picks per inch. In the pegging plan lift White.

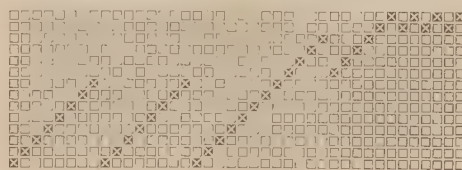
## No. 622.



Design.



Pegging Plan.



Draft.

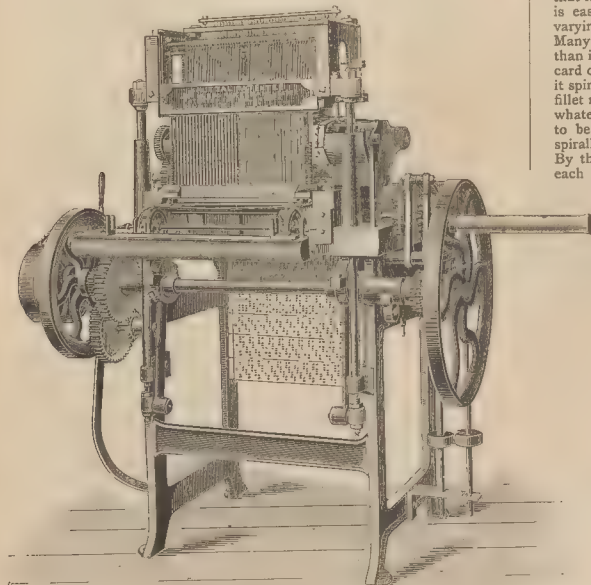
A firm had occasion, some months ago, to pack a feed-water heater  
head, but, as no packing was at hand, they used instead a piece of  
cardboard, putting a second and narrower piece along the inner edge of  
the joint. This packing has never given a moment's trouble, therefore,  
it has not been touched. A little red lead, it would seem, would improve  
it, but as yet they fail to see why it is not as good as any packing that  
can be obtained. The only question is how long will it last?



## MACHINERY, &C.

### Nuttall's Card Repeating Machine.

In our last issue, we gave a description of Nuttall's Jacquard Card Lacing Machine, and, as Mr. Nuttall has devoted the greater part of his business life to the production of mechanisms in connection with Jacquard or fancy weaving, it will be of interest to our readers to put before them the merits of one of his latest card repeating machines, which has already made its mark amongst fancy manufacturers, and especially amongst those to whom price is a consideration. The apparatus has recently been so altered and modified, without in any way taking from its efficiency, that it is now capable of supplying the wants of large and small users alike. There are many manufacturers who take orders only in small quantities and who, therefore, do not require their cards repeating as frequently as where orders are received of greater bulk, and, of course, they do not care to go to the expense of a high priced machine. To these, this apparatus, which is adapted for working either by hand or by power, will be welcome. By referring to



Nuttall's Card Repeating Machine.

the annexed illustration, it will be seen that, extending from one side of the apparatus to the other, and towards the front, there is a main shaft—upon this shaft is a cam which regulates the traverse of the pattern cylinder by actuating a lever on which are two stop pieces. These work into pegs on a wheel keyed on to a shaft in the rear of the main shaft. On this same shaft is a spur wheel gearing into a rack fixed to the frame that supports the pattern cylinder. An endless chain is used for carrying the cards to be punched into the machine, and also to bring the holes in the pattern cards into position under the selecting needles. When a set of cards require repeating, they are put on this chain, and are then carried round under the selecting needles at the same time as the cards to be punched pass under the punches. By means of two cams on the main shaft, the selecting head, *i. e.*, the framework which carries the needles and punches—is raised and lowered, the cutting plate being stationary, the punches alone moving. Each selecting lever is connected to one end of an elbow lever, the other end of this lever passing through a kind of key. When a blank presents itself in the pattern card, this key is drawn back by the elbow lever, and the selecting lever is raised—this prevents the corresponding punch from passing through the duplicate card, but, should a hole appear in the pattern card, the key is not drawn back, and the selecting lever is not raised, and, as a consequence, the corresponding punch is allowed to pass through the duplicate card. After the cutting of a card has been completed, the pattern card cylinder is turned by a catch piece and tumble pawl. In carrying out the operation of cutting, the cards are placed upon an endless chain containing a series of links of a given length, each of which links has, in the centre, a small peg, and each card is perforated at both ends, so that it will pass over these pegs. This endless chain passes over pulleys driven by gearing in connection with the main shaft, and, as it moves, it carries

the cards under the punches. A great quantity of work can be done by the machine, and, from recent tests which were made when working the machine by hand, it showed a capacity of 8,000 cards repeated per day. This, for practical purposes, would be ample for almost any firm. The machines are constructed on a sound principle, and are of first-class material and workmanship, and will, therefore, cut through the heaviest power-loom card board. The various parts, in case of repairs being needed, are easily got at. The space occupied by the apparatus is not more than 4 ft. 6 in. square, and its height is 4 ft. 6 in. By addressing Mr. J. Nuttall, Heap Bridge, near Bury, further particulars can be had.

### Seller's Patent "Angle Set" Card Fillet.

Innumerable experiments have been made in the past in order to produce a correct angle set card, they have, however, resulted in only indifferent success until recently, when Messrs. J. Sellers and Sons, card makers, Scholes, near Cleckheaton, after having spent much time and energy in the endeavour, constructed a machine which yields the desired result. We have had an opportunity of examining various samples of work produced by the apparatus, and have also seen it in actual work, and our opinion is that it is a most perfect machine for card fillet production. The apparatus is easy of manipulation, and will make filleting that will wrap rollers varying from 2 to 50 inches diameter, with any required width of filleting. Many card-users prefer to wrap their smaller rollers with broader filleting than is generally used, but, if this is done, it detracts from the value of the card on account of the extra twist it, of necessity, gets in the wrapping of it spirally, by the very fact of its being made straight on an ordinary card fillet machine. This is easily obviated by this improved method, because, whatever width of fillet is needed, and however small in diameter the roller to be covered may be, it ensures just such an angle as, when wrapped spirally, will give perfectly square points and crown directly to their work. By this means, as in condenser top strippers, it will not buckle, because each lap of card does its own work; it also enters the doffer much more

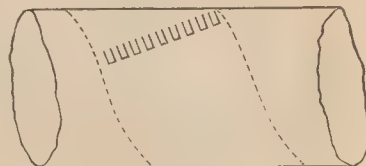


FIG. 1.

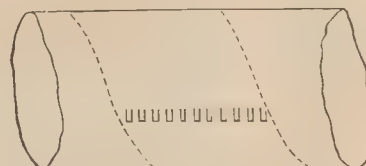


FIG. 2.

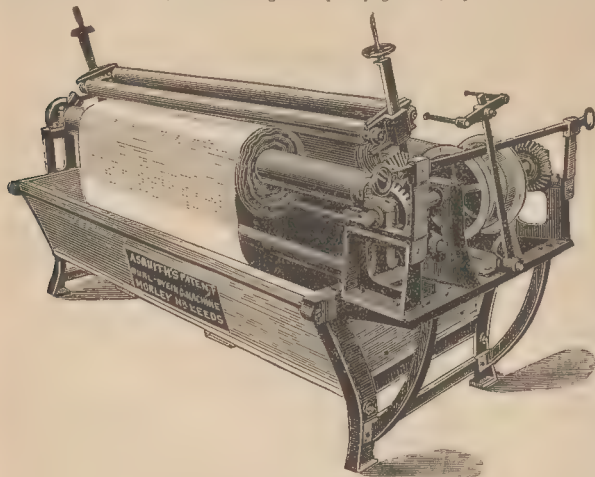
Sellers' Angle Set Card Fillet.

easily, thus reducing the wear and friction, and prevents shunting of rings. Sheet cards have been, and are now, to a large extent, used for angles and small strippers and small rollers generally, because, by this means, square points are presented directly to their work. The same result is achieved by wrapping with this fillet, it also gives a full roller without having the spaces necessary in nailing sheet cards, which are so very objectionable, and greatly interfere with the wear of the card. Besides, it will not throw any material out at the ends of the strippers, thus the making of waste is reduced. The many advantages to be derived by using this patent angle set card will be very apparent to practical users. It is the most perfect card filleting in use, being made on a correct principle. The producing of it to the exact diameter of roller giving square points when wrapped, thereby doing its carding on such a scientific principle, should recommend itself to manufacturers. The card clothing, by the points being straight to their work, have less wear and tear on it. It is guaranteed that, in carding, more material, consistent with good quality of work, can be got through than is the case with the ordinary make of card, and a superior class of work can be done. Judging by the success which has already attended it, and by the expressions of approbation of manufacturers who have already been supplied with it, there seems to be no obstacle to its future success, as it can be produced quite as readily as the ordinary filleting, and is charged no extra price. Fig. 1 shows the position the teeth or dents occupy when wrapped spirally with the ordinary card fillet. It will readily be seen how the points are twisted, being, on that account, unable to do their proper amount of work, and detracting from the working strength of the card. Fig. 2 shows the card when wrapped by their patent angle set card fillet, made to diameter of rollers, giving perfectly straight points to their work. Samples of this card filleting and prices sent on application.



### Asquith's Improved Burl-Dyeing Machine.

Some twelve months ago, we gave a description of a patented burl-dyeing machine, invented by Mr. J. D. Asquith, Machinist, Queen's Mills, Morley, Leeds. This machine has recently been much improved, and its mechanism greatly simplified. Mr. J. D. Asquith has spent much time and thought in its perfection, with a very satisfactory result, and, undoubtedly, he ought to reap a substantial benefit from it. It is well known amongst users of burl-dyeing machines that, when the fabric has to be dyed, it is put upon a roller at one side of the vessel which contains the liquid dye, and is then unwound on to another roller on the opposite side of the machine. When undergoing the operation, the material passes under guide rollers immersed in the dye vessel. After it has been unwound and wound again from one roller to the other, an attendant, by operating the belt, throws the winding-on roller into gear with a positive driving mechanism, thus causing the motion of the two rollers to be reversed, and, in consequence, the piece is wound the reverse way. This reversing operation is repeated, either by hand or by suitable mechanism, until the fabric has been sufficiently dyed. In carrying out his improvement, Mr. J. D. Asquith makes the mechanism self-acting, so that an attendant is dispensed with. The annexed illustration gives the main features of the apparatus. A shaft runs across the centre of the machine, to which three iron arms are fixed, one of which operates the strap-guide, and to the other two are attached bearings and slide rollers and two upper rollers, the latter being for the purpose of working on the fabric wrapping round the roller at one side of the machine, which it does in such a manner as to cause a reversal of the rollers and to re-wind the fabric on to the roller at the opposite side of the machine. The two upper rollers are fixed by their ends on to iron bars which slide through two boxes, one at each end of the machine, the boxes being fixed upon upright arms, keyed or



Asquith's Improved Burl-Dyeing Machine.

fastened to the above-mentioned shaft, which runs across the centre of the machine. The boxes are moveable, and are made to slide up or down the upright arms so as to suit different lengths of fabrics that have to be wrapped upon the rollers. In addition to the above mechanism, the machine has an improved brake fixed to the friction pulley, which is self-acting. When working the fabric from one roller to the other, there is, of course, a gradual increase of fabric upon one roller and a lessening upon the other. Whilst this is going on, the upper roller, which is working against the former, is gradually pushed back by the bars at the ends of the upper rollers sliding back until the fabric roller is full, when the mechanism is acted upon, and the fabric re-wound upon the reverse roller.

### Singleton's Patent Power Loom Brake.

One of the chief essentials to a power loom, in order to render it efficient, is a brake that can be thoroughly relied upon to do its work effectively; and such a one has been brought under our notice by Mr. Thomas Singleton, machinist, Bank Top Works, Darwen, Lancashire, who, for a great number of years, has been a patentee of various appliances for different classes of machinery in use in the textile trades. It is now generally agreed that the use of a good brake benefits employers and employes, as cloth can be produced in greater quantities, as well as of an improved quality, as regards weaving, than is possible with brakes that work in an indifferent manner. The brake is a double-acting one, inasmuch as it clips or presses on the back and front of the fly-wheel at the same time, thus preventing any unnecessary strain upon the loom, this motion being much more effective than those which only press on one side of the fly-wheel. Another great advantage is that it does not in any way inconvenience the weaver when at work, as it occupies such a position

that it is out of the way; but, at the same time, the fly-wheel can be handled easily when required. The leathers also are so placed that, if requisite, they can be easily re-adjusted or re-placed, with very little loss of time, in a most convenient manner. By its use, the wear and tear of the loom is reduced to a minimum, and mashes or traps are not so liable to occur, as the loom is started much more easily than is generally the case, because the brake is so applied that the loom comes gradually to a stand, leaving the slay in the desired position for re-shuttling. The weaver can do much more work with less fatigue than in some of the old systems, as there is no moving the slay back and lifting heavy weights attached to a brake lever. The mechanism of the brake will be seen from the annexed illustration, and Mr. Singleton is so sanguine of giving satisfaction to purchasers that he will fix one or more brakes on approval, and will be pleased to enter into correspondence and to supply particulars and prices on application.

### Prevention of Stripiness in Woollen Stuffs Dyed in the Piece.

(Färb Zeit.)

The question about the cause of unequal colouring in woollen stuffs, and the means of avoiding it, becomes daily more important to the dyer; for, however, much opinions may differ on this fault, so inconvenient to the dyer as well as to the manufacturer, yet there seems to exist a general admission that, of late, it appears far more frequently and more strikingly than was the case in former times. Now this is a real fact. It may be true that formerly not such high claims were laid to the finishing of woollen stuffs with respect to evenness of colour as at present, but it is equally certain that those differences in the colouring, such as are not at all rare in recent times on stuffs dyed in the piece, were known formerly as exceptions only, produced by great carelessness in the dyeing process. It cannot be denied that the manufacturer in our days does not, in many instances, proceed as carefully and conscientiously in his operations as was formerly the case. The daily increasing competition, the striving after larger profits, the substitution of machinery for manual labour, have marked our time and its industry with the stamp of quick living, and have gradually made us inclined to value a product more according to quantity than to quality. In the interest of industry it is desirable that, in operations of permanent importance in manufacture, the old thoroughness should be preserved. This bears, in the first place, on the washing of wool, yarns, and stuffs, before the dyeing. It is well known, and proved by practical experience, that, in consequence of the various manipulations to be applied to the stuffs, such as washing, pressing, wringing, hanging on rods, treatment in the hydro-extractor, etc., all the impurities of an oily or different nature are found, in most cases, to be unequally distributed, and that, consequently, an equal attraction of the colouring matter cannot possibly take place. In spite of this, the fundamental rule is too frequently neglected, namely, that every material intended for dyeing should be carefully cleaned, and subjected to the process of dyeing only in a clean state, and without blemish. For loose wool, such an exquisite purity is apparently less necessary, at least as far as regards unequal dyeing, because the unequally dyed portions are so thoroughly mixed in the course of manufacture, by spinning and weaving, that at most the intended shade can only suffer a slight deviation. Now, it is the unanimous opinion of all authorities in the woollen industry that, to obtain perfectly pure stuffs, a clean washing of the wool is an unconditional requirement, and hence we are brought to the conclusion that wool intended for cloth to be dyed in the piece should, for the greater reason, be submitted to a most thorough and carefully conducted process of washing. There is nothing that favours more the occurrence of impurities in yarns and stuffs than the residue of wool fat adhering to the woollen fibre, and to yarns and stuffs manufactured. Wool badly cleaned of fat will never turn out quite pure, or at least not as pure as is necessary for a uniform appearance of the colours in the piece. It might be objected that very many yarns, and even cloths, manufactured from unwashed wool, were afterwards washed perfectly clean. But, it should be observed that this is done mostly with inferior material, and even then never for finer colours. A further circumstance, accounting partly for the more unfrequent occurrence of unevenness at the present time, is that a great part, if not the whole, of the wools now used for manufacture, show a character different in many points from that of the wool material of former times. This characteristic difference may be distinctly observed by anyone who, in addition to home-grown wools, (formerly used exclusively), also manufactures with Colonial wools. Thus, the transmarine wools, especially the Cape wools, also have a greasy feel, which cannot be removed, even by the most thorough washing, and they, consequently, show an indifferent affinity to water, a property either absent altogether in native wools, or possessed by them only to a very small degree, but which, in the occurring of unevenness, plays a significant part. The fibre retains this property throughout all the stages of the manufacture, and thus it happens that also the yarns, or cloths, show little adhesion to water, and wet out with difficulty, whilst they, as rapidly, lose the quantity absorbed. A short time of hanging, free on poles, often suffices for the removal of the greatest part of water from yarns and fabrics, however thoroughly they were wetted, and,



to make the upper portions appear so dry that an energetic mechanical working is necessary to wet them through again equally. Now, nothing is more natural than that the fabrics, as they do with respect to water, also manifest an indifferent behaviour in the dye liquor, and that, consequently, the latter fills, and penetrates the more wetted places of the cloth, or yarn, far more rapidly than the others. This accounts for uneven dyeing. It is to be observed that the circumstances mentioned may occur also in otherwise pure fabrics whenever wools of the above kind come into question, and, when no care is taken that the fabrics are put into the dyebath in a uniformly wet condition. The worst, however, is that such wools present considerable difficulties in washing, and, in spite of all precautions, can often not be thoroughly freed from grease. This is also a consequence of the greasy nature of the fibre. The defective purity of most washed Cape wools is not only a consequence of irrational operating in washing, but, in a greater degree, one of the peculiarities mentioned of those wools. If the wool is not pure, the fabrics undergo the same fate as mentioned above, and thus the chances of uneven dyeing increase. It should, therefore, be made a rule that washed transmarine wool should, before manufacture, be subjected to a sound and most careful washing. The time, labour, and expense necessary are rewarded by a better result in colour, and this latter advantage would be even an equivalent for the partial depreciation by the felting caused by this back washing, which, however, if the operation is conducted rationally, is not as bad as is usually supposed. Lastly, the chemical operation of removing the burrs, by means of acid and heat, the so-called carbonising (also a modern invention) applied to at least 50 per cent. of all woollen cloths dyed in the piece, contributes in no small measure to make the intricate and frequently quite unaccountable phenomena in dyeing, milling, and washing, still more complicated. To the substances already considered, creating uneven colours in yarns and cloths, carbonisation adds another factor, namely, an acid, or a salt arising from the neutralisation of the latter, the residues of which adhere to the fibre demonstrably so much the firmer, the less the latter is free of natural grease and other substances of a fatty consistency. Three causes have thus been detected, by the effect of which the more frequent occurrence of stripiness at the present time has been explained:—

1. The want of thoroughness and care in the washing of wools and cloths.
2. The peculiar character of the wool material at present prevailing in manufacture.
3. Carbonisation.

The author points out the means of counteracting the second cause of uneven dyeing found by him by practical experiments. In order to increase the adhesion of water to the woollen fibre, and the attraction of the fibre for the dyestuff, the wool has first of all to be cleared of its peculiar greasy state, and of other impurities that may adhere to it. Goods manufactured from Sydney, Buenos Ayres, or Cape wools, which were dyed as loose wool, and, therefore, exposed to boiling during more or less time, could in the milling be cleaned much more easily and thoroughly than was the case with white pieces, or with such as have received a preliminary shade of blue in the vat before being dyed in the piece. This fact induced the author to boil such wool, after washing, for half-an-hour, or three-quarters-of-an-hour in pure water, and then to rinse it again in cold water. The result agreed with expectation. The goods could be cleaned more easily and better, dyed more evenly and a fuller colour, than other pieces from unboiled wool, dyed simultaneously with the first. This last circumstance is a proof that, by the boiling of the wool, a too close adhesion of oily substances, alkalies, acids, etc., coming into contact with the fibre at a later stage, was prevented, and, therefore, the power of attraction of the fibre for the dye was increased. But since, in consequence of the treatment in boiling water, the wool loses some of its elasticity and property of felting, and, because both these qualities are desirable in spinning and fulling, instead of the wool being boiled, the ready and dressed goods may be subjected to the process of boiling, a practice which the author, in most cases, follows, and, if there is any suspicion about the purity of the goods—of still containing some residues of soap or oil—a small quantity of potash may be added; if necessary, this may also be done during the boiling. Where elasticity and the property of felting are of less consideration—nor can, in wools dyed in the boiler, a small weakening of these qualities be thus avoided—it is still advisable to boil the wool before spinning, in order to obtain an easier purification of the goods of oil, soap, etc. The pieces, or even the yarns, may effectually, before dyeing, be subjected to the same procedure. The chief point is that the wool, as well as the fabrics or yarns, should be thoroughly rinsed immediately after boiling, when still warm, that the dissolved substances may be removed before they again coagulate on the fibre. Fabrics are brought to the stocks or milling machine directly from the vat or the boiler, and rinsed clear after addition of Fuller's earth, or they are brought from the boiling vat into a second vat filled with pure water that can, from time to time, be renewed. This second vat contains two pairs of squeezing rollers—one horizontal, the other vertical—close together, through which pieces are sewed together to form an endless band are made to pass until they are perfectly clean—that is, until they have lost their slippery feel. Instead of the two pairs of rollers, a single horizontal pair may be mounted for the whole breadth of the cloth, but, in this case, the cylinders should be made to fit well; and so that they will not turn dry, one of them should, besides, be covered with indiarubber. For the same purpose, a broad-washing machine may be employed, with the additional advantage that the washing may be done with Fuller's earth, which is preferable to the simple squeezing and rinsing in

the vat. Finer stuffs, which have to undergo the finishing before the dyeing process, are boiled best before the finishing. This prevents the impurities to be extracted from being fixed too firmly on the fibre by the finishing. For the preservation of the nap, the goods may also be wound loosely on wooden cylinders, but should then, before cooling down on the cylinders, be immediately beamed off and brought, while still warm, to the washing machine. With a view to a thorough cleansing, the boiling in an open boiler is to be preferred. If this operation is carried out correctly, it will be found that the colours obtained are more brilliant and fuller, and that, besides, there is a saving in dyestuffs. With unboiled goods, part of the colouring matter is lost through rinsing, in consequence of its being fixed less firmly on the fibre, so that the shade has frequently to be made somewhat deeper. The chemicals used for carbonising and neutralising will now adhere to the fibre so much the less, the better the material has become freed from oil, soap, and alkalies. Their deteriorating effect in piece dyeing is, therefore, partially prevented. The purer the material, the more easily and safely the neutralisation of the acid, and the washing out of the salt formed, will take place. A perfect neutralisation is obviously the first condition, and a copious use of litmus paper, by which the presence of any trace of free acid is indicated, is to be recommended. In consideration of the manifold complications arising from combinations between the residual acid or the neutralising substances with the soap applied to the wool, it is advisable to carbonise the fabrics after fulling. This, however, is possible only with those kinds of material which, after fulling, have still to undergo some mechanical process, such as raising or pressing, etc., as mechanical aid in the removal of the carbonised organic remains of vegetable origin cannot be easily avoided.

### Woollens and Worstedes at the Paris Exhibition.

Mr. E. Woodhouse recently presented to the Leeds Chamber of Commerce a written report of his duties as a member of the jury in Class 32, Textile Fabrics, at the recent International Exhibition in Paris:—"The jury was summoned to meet on Saturday, June 15th, for the purpose of making all arrangements as to mode of procedure, &c., and on the following Monday morning we commenced the actual work of examining all the exhibits in our section, which occupied the whole of the week. When we assembled at the 'bureau' provided for our convenience, I was surprised to find, notwithstanding that several nominations had been made from the various centres of the cloth industry in England and Scotland, that I was the only person who had been appointed by the French Executive to represent Great Britain. Austria likewise was represented by one juror only, the other gentlemen, to the number of some 20 or 25, being French and Belgians. It was explained to me that the principle adopted by the French authorities was that each nation should be represented on the jury in proportion to the number of exhibitors, and, as Great Britain had only 10 exhibitors in this class, we were not entitled to more than one juror, whilst France was represented by no fewer than 190 exhibitors, and her colonies by 25. There were 33 from the Argentine Republic, 30 from Belgium, 43 from Roumania, 15 from Russia, 77 from Servia, 47 from Spain, 7 from the United States, and a few others from other places. The method adopted by the jury for determining the degree of award was simple but effective. Each juror was supplied with small pieces of blank paper, upon which he had to write a numeral, representing his opinion as to the merits of each individual exhibitor. When all the voting papers had been collected by the secretary, the aggregate was divided by the number of jurors present, and the result decided the quality of award. The numbers were regulated as follows:—Honourable mention, 5, 6, 7, or 8; bronze medal, 9, 10, 11, or 12; silver medal, 13, 14, 15, or 16; gold medal, 17, 18, or 19; diploma of honour, 20, 21, or 22. The jury met each afternoon in the 'bureau,' for the purpose of deciding the award for the exhibitors whose productions we had examined in the forenoon, and it was at this point that I and the other two or three foreigners felt that we were placed in an awkward position. It was laid down almost as a *sine qua non* by the President and the French jurors that, unless the exhibitor had seriously retrogressed in the value of his productions since the Exhibition of 1878, he should have an award of not less value than was then conferred upon him. It will be seen at once that this meant little less than wholesale and indiscriminate decorations, and, as the French exhibitors were so numerous and foreigners so few, we felt that it would be somewhat ungenerous for us to do anything to interfere with our French colleagues from decorating their compatriots at their own expense. I will give one illustration only. A French manufacturer of fancy trousers, whose exhibits were comparatively worthless in every respect, received a silver medal, because he had a silver medal conferred upon him in 1878. I expressed my own opinion to the jury, but I would not throw the slightest impediment in the way of Frenchmen decorating French manufacturers with French money, and, in this decision, I feel sure I shall have the approval of the members of your Chamber. The Exhibition, so far as the Textile Fabrics Section was concerned, could not, in any sense, be considered an international one, but was essentially a French and Belgian Exhibition. The 33 exhibits from the Argentine Republic, 43 from Roumania, 77 from Servia, and 47 from Spain, were evidently a series of collections exhibited by firms who were not manufacturers of the articles they exhibited, but contained



large infusions of the products from a number of different nations, consequently, they do not, for the present purpose, call for any comment from me. The class we had to deal with comprised all worsted and woollen cloths, worsted and woollen yarns, Cashmeres, and a variety of fabrics for ladies' wear. In the French Section there were some excellent samples of yarns, especially in mule spun yarns, which appeared to me to be about perfect; but in cloths I was much disappointed as regards styles, construction, colours and finish. The designs contained no novelty: there was very little in the way of artistic combination of shades, and the finish of the cloths all round was far below what I had expected to find. There was a large display of faced cloths suitable for military purposes in the French and Belgian sections, but the colours were 'staring' and unpleasant to the eye. In this respect, they were not to be compared with the exhibits of one or two West of England manufacturers, whose colours were bright, yet soft, and the finish, too, was much superior to any of the Continental exhibits. In fancy goods, suitable for suitings and trouserings, the designs were of the most ordinary character, which caused me to regret that the Yorkshire manufacturers had so generally held aloof from entering into competition with Continental makers. In this department, it would have been easy to name half a score makers in Huddersfield and Leeds who could have eclipsed the whole of the combined forces that were in evidence. It is difficult to understand the great contrast between the excellency of the yarns, and the mediocrity of the cloths, unless it be that preparing yarns for exhibition is so much easier than developing the same yarns into complete and finished fabrics, where so many departments are called into requisition, and where both scientific knowledge and artistic skill are indispensable. I must not, however, omit to mention the very magnificent productions for ladies' robes from Picardy, &c., especially fabrics having a silk ground and patterns of velvet upon them—nothing could be more perfect in make, or more beautiful in colouring and design. In this class, there appeared to be little or no foreign competition, consequently, I had no means of comparing them with our own manufacturers of similar articles. I finished my labours with a profound conviction that British manufacturers of woollen and worsted cloths have nothing to fear at present from Continental makers on the score of construction, design, colouring, or finish; and, as all these are important factors in the regulating of values, I did not attach much importance to the moderate prices which were ticketed upon many of the Continental samples. The exhibits of the very small number of British manufacturers were good so far as they went, but did not represent one-fiftieth part of what can be done and what is being done daily by my compatriots. In conclusion, I feel it to be my duty to express my cordial appreciation of, and thanks for, the uniform kindness and courtesy extended to me by my colleagues on the jury, as well as for the magnificent hospitality offered to me by the President of the French Republic and Madam Carnot, Sir Polydore de Keyser (President of the British Jurors), and Monsieur Dauphnot, the President of the Jurors in the Textile Fabrics, Class 32."

### Post Office Notices.—Parcels Post.

**GIBRALTAR AND MALTA.**—The postage of parcels not exceeding 11 lbs. in weight, for Gibraltar and Malta, *via* Gibraltar, is reduced to the following rates:—Not exceeding 1 lb., 5d.; for each lb., or fraction of a lb. additional, 4d. No parcel must exceed 3ft. 6in. in length, or 6 ft. in length and girth combined.

**TURK'S ISLANDS.**—Parcels are now accepted for transmission to Turk's Islands, *via* Jamaica, at the following rates:—Not exceeding 1 lb., 9d.; for each 1 lb., or fraction of a lb. additional, 9d.

**ORANGE FREE STATE.**—Parcels are now to be accepted for transmission to the Orange Free State. They have, hitherto, been accepted for transmission as far as Cape Colony only, their conveyance thence to their destination being at the cost of the addressee. Under the new arrangement, however, the senders of parcels will be able, by prepayment of the postage, to cover the cost of conveyance as far as the place of destination in the Orange Free State. The following are the chief special regulations for the parcel post with the Orange Free State:—Not exceeding 1 lb., 1s. 8d.; for each lb., or fraction of a lb. additional, 1s. 3d. On all parcels containing dutiable articles there will be collected from the addressee, in addition to the Customs duty, a fee not exceeding 1s. 6d. per parcel for stamp duty, clearance, &c. No parcel may exceed 7 lbs. in weight, nor be more than 3 ft. 6 in. in length, or 6 ft. in length and girth combined.

John T. Waring, New York, has invented an improved carpet wire, the novelty in which consists of a detachable cutting blade of highly tempered steel, secured in a slot, and an eye-piece dovetailed to the wire instead of being brazed. It is claimed that these wires last much longer and cut better than others, especially on fast running looms.

One way of removing scale from a boiler is to cool it off, draw off the water, and then admit steam from another boiler, when the scale will crack off and can be washed out.

The Canadian Minister of Customs has officially announced that, in future, goods "having no commercial value, and obviously intended for use solely as samples to sell by, may be admitted free of duty."

### Personal and Trade Notes.

Mr. John Smith, Holyrood Mill, Oldham, died at his residence, at Colwyn, North Wales, on the 22nd December.

Mr. George Mort, Patricroft, has had a complete specification accepted for producing figured cloths, known as Mitchelline.

We hear that Mr. James Bancroft, Millstead's Mill, Todmorden, has taken Cinderhead Mill, in which about 300 looms will be running.

A large thread mill is to be built in Russia. Three large firms are interested in the undertaking, namely, Messrs. Brook, Clark, and Coats.

Mr. Thomas Nuttall, cotton spinner, Farnworth, Bolton, died at his Welsh residence, Plas Geraint, in the Vale of Llangollen, on Dec. 22nd.

A fire at Messrs. Barbour and Sons, Hilden, near Belfast, which occurred on December 30th, destroyed thread to the value of nearly £26,000.

Messrs. J. and S. Rhodes, Prospect Mills, Morley, near Leeds, have bought Queen's Mills, which they are going to run, giving work to about 200 hands.

The Vigogne spinners of Werdau (Germany) have decided to work one hour less per day, commencing with this month, but to pay the same rate of wages. This is equal to an advance of 8 per cent.

Mr. John W. Brown, of the firm of Messrs. Brown, Buckholm Mill, Galashiels, died on the 28th December. He had gone to Nice for the benefit of his health, and died there in his 32nd year.

The cotton spinning business of J. M. Bateman, Farnworth, Lancashire, has been registered as a limited company, under the name of P. & T. Bateman, Limited. The capital is £16,000, in £1 shares.

The firm of Messrs. Henry Bayley, Sons and Co., Limited, cotton spinners, was registered on December 20th, with a capital of £100,000, in £10 shares. The mills are at Bayley Street and Bridge Street, Staleybridge, Lancashire.

The new Baronet, Sir Albert Sassoon, is a member of a great mercantile house in India, which, amongst other things, is actively engaged in the China silk trade. At home and in India, Sir Albert Sassoon is warmly congratulated on receiving the honour.

Messrs. John Crossley and Sons, Limited, Halifax, have been awarded a gold medal at the Melbourne Exhibition for an extra wide carpet of natural wool. Messrs. T. F. Firth and Sons, Bailiff Bridge, Brighouse, have also received an award for Brussels and tapestry carpets.

Messrs. John Crossley have declared a dividend equal to 7 per cent. for the year. The profits amount to £106,735 2s. 7d. After paying the dividend, £23,578 4s. 7d. will be carried forward to next account.

Messrs. Reddaway & Co., Pendleton, held their annual dinner recently, when it was stated that the number of workpeople, and the amount of business done, has increased greatly during the past year.

Camel hair and cotton belting have a great reputation, as will be seen from the fact that Messrs. Reddaway & Co. have branches in Manchester, Liverpool, Glasgow, and London, and have representatives in Russia, Paris, Hamburg, Berlin, New York, Melbourne, and in India and China.

The death of Mr. Frank Burnley, of the firm of Messrs. Thomas Burnley and Sons, spinners, Gomersal, near Leeds, caused much regret amongst those who knew him. He was highly respected by the inhabitants, and his death cast a gloom over the New Year festivities of Gomersal.

A London manufacturer complains that out of 100 of his workmen who are paid by piece-work, not one is laid up with influenza, but out of 20 others who are paid by salary, eight are absent on account of the complaint. He infers that influenza only attacks those who are paid when absent from work.

Some of the Hawick and Galashiels manufacturers have been proposing to adopt a trade mark as a protection against those foreigners and others who sell other goods as of Scotch manufacture. Although it has been felt that trade was suffering in Scotland from this cause, the proposal has not been met with success.

We understand that the Carpet Syndicate has been formed with a capital of more than £2,000,000, and that nearly all the firms in Kidderminster and the North are members. The proposals include the introduction of several new industries, the purchasing of patents for making new fabrics, and the introduction of linen and cotton spinning.

At the fifteenth annual meeting of Messrs. Norton Brothers and Co., Limited, Nortonthorpe, near Huddersfield, the directors surrendered in favour of the company 2,500 shares, worth £17,500. Future dividends will, therefore, be divided between 20,000 shares, instead of 22,500 as before. The dividend for last year was 4 per cent.

The Freedom and Livery of the Clothworkers' Company will be presented to Sir Edward Guinness "in token of the great appreciation held by the citizens of London of his recent munificent benefaction for the better housing of the working classes in the Metropolis." A like compliment was paid some years ago to the late Mr. George Peabody, in connection with a similar work of civilisation and philanthropy.

Samples have been received by the Leeds Chamber of Commerce of Hessen linen, osnaburgh, towelling, duck, canvas sailcloth (Royal navy and merchant), coal bag, sack, and hammock cloths, white cotton drill, twines, threads, and curled hair required by the Admiralty, tenders for which are to be delivered on the 21st January: also of worsteds, flannels, blankets, blue cloth and serge, and blue cloth caps required by the same Department, tenders for which are to be delivered on 28th January.

Mr. Thomas Bright, Greenbank, Rochdale, died on Wednesday. Mr. Bright was next brother to the late John Bright, and senior partner of the firm of John Bright and Bros., Limited, Tapestry Carpet Manufacturers and Cotton Spinners, of Fieldhouse Mills, Rochdale.

Messrs. Homfray and Co., a new firm, are starting the manufacture of Axminster Carpets and Rugs at Albert Mill, Sowerby Bridge, near Halifax. Mr. H. J. Homfray has been for several years with Messrs. Tomkinson and Adam, and Mr. Lorimer, who is associated with him in the new undertaking, has had thirty-five years' experience in the Carpet Trade.

## PATENTS.

## Applications for Letters Patent.

Attaching ring frame spinning bobbins to spindles. J. H. Wilson, Manchester.	27th Nov. 19,037
Attaching clothing to carding engine flats. C. Hassul and E. Holt, London.	27th Nov. 19,072
Air feeding to steam boilers. F. Leadbeater, London.	2nd Dec. 19,358
Air propellers. W. Tattersall, Bradford.	19th Dec. 20,467
Borders or trimming on fabrics. J. D. Morley and R. W. Scott, London.	26th Nov. 19,009
Bearings for spinning, &c. J. and T. A. Boyd, Glasgow.	27th Nov. 19,036
Belts (securing leather). W. M. Trousdale, Harrogate.	27th Nov. 19,040
Bobbins (lace). J. Jardine, Nottingham.	28th Nov. 19,106
Belting (link or jointed). J. Magnin and S. Recbourg, London.	2nd Dec. 19,337
Blowing or steaming, boiling, &c., fabrics. A. T. Clay, Halifax.	3rd Dec. 19,377
Bobbins (spinning and doubling). W. A. and W. Healey and J. S. Milne, London.	4th Dec. 19,476
Bars of flats, &c. J. Bullough, Halifax.	7th Dec. 19,679
Beaming and balling warps. H. Haworth and J. Walmsley, London.	9th Dec. 19,757
Braiding Machines. W. P. Thompson, Liverpool.	10th Dec. 19,898
Cleaning flax, &c. A. Spiegelberg, Glasgow.	27th Nov. 19,035
Cutting Sealskin, &c., in Loom. F. Heaton, Wyke.	27th Nov. 19,056
Carpets, Turkish and Indian, &c. (machine for). J. W. Hartley, Stockport.	30th Nov. 19,235
Carding and combing. G. Tolson, Huddersfield.	4th Dec. 19,404
Carding engines (revolving flat). B. A. Dobson and W. I. Bromley, Manchester.	5th Dec. 19,519
Cup used in winding yarn or bobbins. J. Blamires, Huddersfield.	11th Dec. 20,027
Carded wool for spinning and apparatus. A. Pilard, London.	18th Dec. 20,386
Card and braid machine (combined). W. J. Adams, Manchester.	19th Dec. 20,465
Dyeing yarns, &c. F. B. Gonty Leicester.	25th Nov. 18,850
Driving Belts. J. Taylor, Manchester.	25th Nov. 18,867
Driving Belts (woven). F. Reddaway, Manchester.	26th Nov. 18,957
Dyeing cotton, &c. L. Weldon, London.	26th Nov. 18,978
Dressing silk, &c. G. F. Priestley, Halifax.	27th Nov. 19,045
Driving and stopping for twisting, &c., spindles. J. Boyd, Glasgow.	29th Nov. 19,184
Dyeing and drying fabrics. B. J. B. Mills, London.	29th Nov. 19,196
Dyeing, cleansing, bleaching, &c., yarn in cops, &c. C. Weber-Jacquel, London.	3rd Dec. 19,408
Dyeing textile fabrics. C. Corron, London.	10th Dec. 19,863
Dyeing wool, &c., F. Rhodes, Huddersfield.	14th Dec. 20,154
Facilitating the conveyance of prepared warps and placing on warp beams. G. Carr, Barnsley.	25th Nov. 18,878
Fustian cutting tables. J. Shepherd, London.	27th Nov. 19,071
Fancy weaving. J. Pickford & I. Taylor, Manchester.	28th Dec. 19,117
Fatty or greasy matters (separation of) from wool washing waters. C. W. Kimmins and T. Craig, London.	3rd Dec. 19,403
Friction motion for regulating tension of warp beams. W. L. Mitchell, Glasgow.	3rd Dec. 19,441
Finishing pile fabrics. S. C. Lister London.	9th Dec. 19,798
Finishing imitation seals, &c., made of silk. J. Reixach, London.	11th Dec. 19,799
Finishing manufactured or partly manufactured materials of cotton &c. H. A. Lowe, Manchester.	17th Dec. 20,314
Figured cloth. T. Pearson and J. Taylor, London.	12th Dec. 19,992
Gill boxes and carding machines. W. Townend, London.	26th Nov. 18,964
Gig mills. C. E. Moser, London.	5th Dec. 19,547
Healds and harness of looms. J. Yeadon, Bradford.	26th Nov. 18,947
Holding and regulating bobbins, &c., for warping, &c. E. W. Cooper, Birmingham.	5th Dec. 19,544
Humidifying the air of factories, &c. W. Tattersall, Bradford.	11th Dec. 19,977
Jacquard (open shed). W. MacIlwraith, Glasgow.	21st Dec. 20,576
Looms for pile carpets. Messrs. Sallandrouze and Sallandrouze le Moulec, London.	25th Nov. 18,910
Looms (frames of). C. W. Lancaster, Halifax.	9th Nov. 17,869a
Laying sample yarns on pattern cards. H. and J. Dawson, Bradford.	2nd Dec. 19,318

Lingo steadyers. W. MacIlwraith, Glasgow.	5th Dec. 19,577
Looms. A. J. Boulton, London.	7th Dec. 19,753
Let-off tension of looms. W. MacIlwraith, Glasgow.	9th Dec. 19,778
Loom over-pick motion. J. South, London.	12th Dec. 19,989
Looms (pile fabrics). A. L. J. Trochme, London.	16th Dec. 20,222
Loom picking motion. J. Coulton and J. W. Horsfall, Manchester.	17th Dec. 20,266
Lace (twist) and bobbin net. J. and H. S. Cropper and W. Birks, London.	17th Dec. 20,280
Loom shedding motion. R. Wilkinson, Bradford.	20th Dec. 20,477
Lace machines. W. Wallis and G. Longden, London.	21st Dec. 20,566
Mats and rugs (wool). E. Harris, Sunderland.	5th Dec. 19,518
Mules (self-acting). J. Clegg, Manchester.	18th Dec. 20,325
Preventing breaking of fallers. H. G. Carr, Baildon.	27th Nov. 19,049
Patent positive picking motion. W. R. Meadows, S. Wild and E. W. Dawson, Bury.	27th Nov. 19,057
Pickers (loom). Y. J. Fielden, Manchester.	29th Nov. 19,186
Preventing ballooning. J. Brittain, Stockport.	7th Dec. 19,656
Picker and shuttle check. J. Dugdale, London.	9th Dec. 19,756
Picking motion. J. Knowles, Blackburn.	11th Dec. 19,930
Printing (indigo). J. Cowan, Glasgow.	17th Dec. 20,301
Pickers. J. & J. Ingham, Thornton.	18th Dec. 20,327
Pickers. W. S. Critchley, Bradford.	19th Dec. 20,416
Reeling yarns, &c. J. Sivey, Manchester.	28th Nov. 19,170
Ring frame bobbins. J. H. Wilson, Manchester.	30th Nov. 19,253
Ribbed fabrics and machinery. L. and C. R. Woodward, London.	5th Dec. 19,598
Regulated drag (applying) to bobbins. S. Balmforth, Huddersfield.	7th Dec. 19,719
Shuttle tongues. J. McFerran and J. B. Pirrie, Carrickfergus.	26th Nov. 18,881
Spindles and flyers. J. W. Bullock, Manchester.	27th Nov. 19,053
Spring cincture for holding fabrics in position. E. S. Pleasance, Bristol.	29th Nov. 19,178
Spring for slashing machine friction pulleys. J. Gregory, Bolton.	30th Nov. 19,234
Socks of hair and wool combined. B. Hindley, Hyde.	30th Nov. 19,251
Spinning frames. R. Walmsley, London.	2nd Dec. 19,332
Shuttle-box looms (circular). R. Foulds, London.	4th Dec. 19,475
Spinning strands, threads, &c., and waxing, dyeing, &c. Messrs. Foster, Deans and Eccles, London.	5th Dec. 19,570
Securing belts, &c. G. Fischer, Manchester.	9th Dec. 19,747
Shuttle check. G. Sanderson and J. Drake, Halifax.	11th Dec. 19,907
Spinning frames. A. J. Boulton, London.	14th Dec. 20,145
Spinning and twisting (quadrants for). T. Watson, London.	14th Dec. 20,167
Spindle bearings. E. & D. Sykes, Huddersfield.	16th Dec. 20,193
Shuttles of asbestos. T. W. Gorton, Tamworth.	18th Dec. 20,339
Spinning frames. T. Watson, London.	19th Dec. 20,435
Shuttles. O. & F. Hibbert, Manchester.	21st Dec. 20,544
Treating vegetable fibres. K. T. Sutherland and G. Esdaile, Manchester.	26th Nov. 18,932
Trimings to imitate fur. J. Walker and Sons, Huddersfield.	28th Nov. 19,125
Tension devices for warps. G. Andrews, Halifax.	6th Dec. 19,609
Treatment of hemp, jute, &c. E. T. Truman, London.	9th Dec. 19,733
Temples (loom). V. M. H. Anusay, London.	16th Dec. 20,229
Utilising waste lace, hosiery, &c., J. Craven, Nottingham.	11th Dec. 19,925
Woven braids and edgings. S. Hancock, London.	5th Dec. 19,597
Warp beaming. H. Barnes, Halifax.	18th Dec. 20,330
Warping and means for preventing the threads of the chains becoming entangled. J. Garstang and J. Bancroft, London.	21st Dec. 20,549
Washing or scouring wool and apparatus. I. Holden, London.	18th Dec. 20,063
Yarn dyeing machines. L. Weldon, London.	26th Nov. 18,971

## Patents Sealed.

14,906	15,018	15,853	15,955	16,010	16,038	16,305	16,155
16,707	17,191	18,987	9,931	6,091	10,974	11,195	11,733
12,079	12,667	12,678	12,764	13,150	13,173	13,174	9,935
12,359	16,301	16,902	17,020	17,094	18,165	5,608	9,549
11,069	13,234	13,329	13,351	13,370	14,578	14,523	15,357
15,495	15,551	15,672	15,993	16,828	17,019	17,393	17,519
17,643	17,644	17,678	17,730	17,861	18,379	18,497	603
1,370	1,906	7,269	11,612	12,986	13,819	13,914	17,128
17,628	17,652	17,957	18,425	18,467	18,730	18,794	10,417
11,408	12,078	13,728	13,965	14,557	14,316		



# The Journal of Fabrics

AND

## Textile Industries.

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### Notices.

The Yearly Subscription—payable in advance—including home postage, is 10s. Cheques and Post Office Orders to be made payable to H. & R. T. Lohd, 10, Ann Place, Little Horton Lane, Bradford, Yorkshire.

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Literary communications must, in all cases, be accompanied by the names and addresses of the writers, not necessarily for publication, but as evidence of authenticity. Authors are requested to retain copies of their manuscripts; rejected manuscripts cannot be returned.

To prevent any misunderstanding, all Articles sent to the *Journal of Fabrics and Textile Industries* for publication will be considered as offered gratuitously, unless it is stated explicitly that remuneration is expected.

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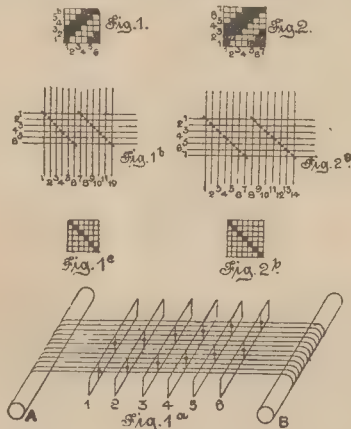
### New Patented Fabrics.

#### AN IMPROVED TEXTILE FABRIC OR MATERIAL ADAPTED TO BE WORN NEXT TO THE SKIN.

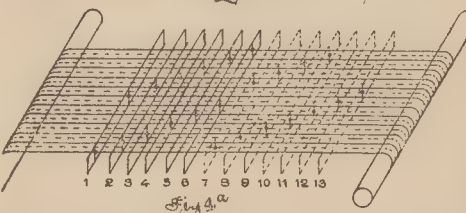
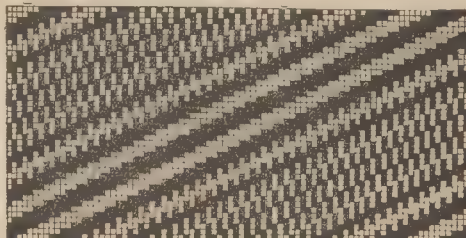
This invention has for its object the production of articles intended to be worn next to the skin, and is intended to have a beneficial effect upon the same and, therefore, to promote the health of the wearer. It has been proved to be specially adapted to cases where coughs or other pulmonary symptoms are to be allayed. A yarn is produced by combining together two different descriptions of yarn, one soft spun and the other hard spun. The softer yarn would in most, or in all, cases be coarser in count than the harder yarn, or might consist of two or more soft spun yarns. The harder spun yarn is twisted to such a degree that it will have an exciting action upon the skin, without being too irritating. The two kinds of yarn are combined together in such a manner that the harder yarn shall form itself into twisted kinks which project at comparatively close intervals from the softer yarn, as in the case of yarn which has been prepared to produce ornamental effects, prior to this invention, but has not contained a combination of fine yarn so hard spun, with thicker and soft spun yarn, like the compound yarn used in carrying this invention into effect. This combination would not be suited to the purposes of ornamentation, but it has been found by experiment to be particularly suitable for the hygienic purposes mentioned, as it secures the combined effects of warmth and gentle, but constant, irritation. The degree of irritation may be varied, according to requirements, by increasing or diminishing the number and proportions of the kinks of hard twisted yarn contained in the compound yarn. The yarn so prepared may be used for chest protectors, or for appliances, or garments, or portions of garments, and may be worked by hand processes, such as knitting or crocheting, or by weaving, or by the aid of knitting machinery, or by any suitable means.

#### IMPROVED METHOD OF PRODUCING AND WEAVING LARGE DIAGONAL PATTERNS FOR TISSUES.

An invention has been patented for the production of tissues with large diagonal patterns with a regular succession of changes in the crossings of the threads, a great number of shafts, or staves have previously been required, or jacquards have had to be employed, both these arrangements being complicated and inconvenient, and admitting only of a moderate speed. The object of the invention is to simplify the arrangement of the loom for the production of such tissues, and to enable

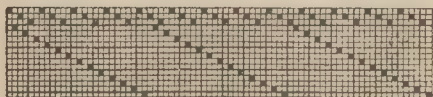


looms producing them to be run at a greater speed: this improvement is effected by a novel method of weaving large diagonal patterns with a comparatively small number of shafts or staves. This method consists in combining two or more diagonal patterns, of any similar inclination or advance, and requiring an unequal number of shafts for their production, by alternating the warp threads of the two patterns one by



one, two by two, or in other regular sequence, in order to obtain, by the unequal coincidence of the different crossings of the threads, diagonal patterns of a large total rapport, or length and width, while the number of shafts required for their production is only small. The width of such combination pattern will be equal to the least common multiple of the number of shafts multiplied by two, for instance, when the threads

in two originating patterns are alternated one by one, while the length of the combined pattern will be equal to the least common multiple of the lengths of the separate patterns. On the two sheets of drawings appended, Figs. 1 and 2 represent two originating patterns, with an unequal number of shafts, producing the combined pattern represented by Fig. 3. In these pattern drawings, the vertical rows of squares represent warp threads, as usual, while the horizontal rows represent weft threads. Fig. 1 thus represents a pattern consisting of 5 warp and 6 weft threads, and each black square signifies that at this point the warp thread shows on the face of the tissue, while a white square signifies that it is at the back, and the weft thread shows on the face. Each warp thread thus floats over three weft threads and passes under three weft threads alternately, and, while being woven, is lifted for three picks into the upper shed, and lowered for three picks into the lower shed. The first warp thread floats over the 1st, 2nd, and 3rd weft thread, the second warp thread over the 2nd, 3rd, and 4th weft thread, the third warp thread over the 3rd, 4th, and 5th weft thread, &c., so that the floating of each consecutive warp thread advances by one weft thread or pick against the preceding one. Each warp thread, therefore, has to be lifted in weaving in a different manner, and consequently, six shafts or sets of healds are required for this pattern. Fig. 1<sup>a</sup> shows



a diagram of the arrangement of the shafts in a loom and the way in which the warp threads are drawn into them. The warp threads, 12 of which are shown on the figure, pass from the back beam A to the breast beam B. Between these beams, the shafts or staves 1, 2, 3, &c. are arranged. The first warp thread is drawn through the first heald of the first shaft, the second warp thread through the first heald of the second shaft, the third warp thread through the first heald of the third shaft, &c. The seventh warp thread, which is woven in the same manner as the first, is drawn through the second heald of the first shaft, the eighth thread through the second heald of the second shaft, the ninth thread through the second heald of the third shaft, &c. In Fig. 1<sup>b</sup>, the shafts and warp threads are shown in a top view, the diagonal short cross lines denoting where the threads are drawn in. Fig. 1<sup>c</sup> shows how this drafting is ordinarily represented in practice, and the weaver draws the threads in according to this drawing in the manner before described. By Fig. 2, a pattern consisting of seven warp and seven weft threads is represented, in which each warp thread floats over four weft threads, and lies under them at the back of the tissue for three weft threads or picks, the floating of each following thread advancing by one pick against the preceding one, and the pattern requiring seven shafts for weaving it. Fig. 2<sup>a</sup> shows the top view of the shafts and warp threads, and Fig. 2 the drafting. Out of these two patterns or crossings of

threads shown by Figs. 1 and 2, the pattern represented by Fig. 3 is formed in this way, that every odd numbered warp thread of Fig. 3 is woven according to the pattern shown by Fig. 1, and every even warp thread according to the pattern shown by Fig. 2. Following the first warp thread of Fig. 3, it is seen that it corresponds exactly with the first warp thread of Fig. 1, being floated over three weft threads, then under three, then again over three and under three, and so on. The second warp thread of Fig. 3 corresponds exactly with the first warp thread of Fig. 2, floating like this over four weft threads, then under three, then again over four, &c. The third warp thread of Fig. 3 is woven exactly as the second warp thread of Fig. 1, the fourth thread of Fig. 3 like the second thread of Fig. 2, and so on. In consequence of the numbers of the shafts for the originating patterns being unequal, a great width and length of the pattern is obtained before it repeats itself. The drafting of the threads is shown in the usual way by Fig. 4, and in a perspective diagram by Fig. 4<sup>a</sup>. In the latter, the first six shafts shown in full lines correspond with the pattern or weave, Fig. 1, while the shafts 7 to 13, shown in dotted lines, correspond with the shafts Fig. 1<sup>a</sup>, pattern Fig. 2. The odd numbered warp threads are shown in full lines drawn in according to the drafting shown by Figs. 1<sup>a</sup> and 1<sup>c</sup>, and the even numbered warp threads are shown in dotted lines drawn in according to the drafting shown by Figs. 2<sup>a</sup> and 2<sup>c</sup>, the combined drafting being shown by Fig. 4<sup>a</sup>. As will be seen from that figure, if the first six shafts are numbered 1, 2, 3, &c., and the seven other shafts 1, II, III, &c., the sequence of drawing in through the healds of shafts 1, I, II, III, 4, IV, &c., with which the pattern Fig. III starts, will not be repeated till after the least common multiple of the shafts multiplied by two.

The numbers of shafts in this case being 6 and 7, and their least common multiple 42, the repetition will only commence after the  $2 \times 42$ , or 84th thread, so that a width of pattern of 84 warp threads is obtained, each of which is woven, or floated, in a different manner from any other. Ordinarily, a pattern of this character and width would require 84 shafts, or, as the loom would, in most cases, be unable to contain these, a jacquard harness for producing it, while, by combining the two originating patterns or weaves in the manner described, only 13 shafts are required. The treading or lifting of the two sets of shafts takes place in the same succession and combination as in weaving the originating patterns. For the first pick shafts 1, 5, 6, I, V, VI, VII are raised, for the second pick 1, 2, 6, I, II, VI, VII, &c. At the seventh pick, the lifting will be as for the first pick of pattern Fig. 1, combined with that of the last pick for pattern Fig. 2, or 1, 5, 6, IV, V, VI, VII. It will be seen that the same combination of shafts in treading or lifting can only recur after a number of picks equal to the least common multiple of the numbers of picks in the originating pattern. These being 6 and 7, the pattern repeats itself only after the 42nd pick. In this way, a large diagonal pattern is produced, and can be woven with a small number of shafts, the width being equal to twice the least common multiple of the number of shafts required for the originating patterns, and its length, or repeat, equal to the least common multiple of the length of the originating patterns, the number of shafts being equal to the sum of those required for the originating patterns. On sheet II, Figs. 5 and 6 represent two other small patterns having a different inclination from those shown by Figs. 1 and 2, the floating advancing by two picks or weft threads, for succeeding warp threads. Pattern Fig. 5 requires 3 shafts, the warp threads floating alternately over and under three weft threads. Pattern Fig. 6 requires 13 shafts, the warp threads floating over three, under three, over three, and under four weft threads. The draft for each is regular, and represented by Figs. 5<sup>a</sup> and 6<sup>a</sup>. By combining the two patterns in the manner described, drawing in the odd numbered warp threads in the first three shafts according to draft 5<sup>a</sup>, and the even numbered threads according to draft Fig. 6<sup>a</sup>, in the second thirteen shafts, and weaving each set of threads in the same way as in the originating pattern, the combination pattern Fig. 7 is produced, Fig. 7<sup>a</sup> showing the drafting for the same. The number of shafts in the originating patterns being 3 and 13, the width of the combination pattern is  $3 \times 13 \times 2$ , or 78 threads, and the lengths of the originating patterns being 6 and 13, the length of the combination pattern is  $6 \times 13$ , or 78 picks or weft threads, while the number of shafts is only 3 plus 13 or 16. In a similar way, by combining a 4 shaft pattern, 16 picks long, with an advance of 4 picks to each warp thread, and a 9 shaft pattern 36 picks long, with the same advance, a combined pattern having a width of twice the least common multiple of 4 and 9, or  $2 \times 4 \times 9 = 72$  threads, and a length equal to the least common multiple of 16 and 36, or of 144 picks, will be obtained. Three diagonal patterns of the same inclination and different shaft number may be combined in a similar way by drawing in and weaving the 1st, 4th, 7th, &c. warp thread, according to the first, the 2nd, 5th, 8th, &c., according to the second, and the 3rd, 6th, 9th, &c., according to the third. Instead of drawing in the threads alternately, one by one, according to the two originating patterns, they may, in some cases, be drawn in two by two, three by three, &c.

The city of Mexico possesses a Chamber of Commerce, composed of the leading commercial people of the place, and this body affords information gratuitously to merchants and manufacturers of any country. It is also the court of registration for trade marks, and the prosecuting authority for trade mark piracies.



## On the Brightening of Woollen Goods Dyed Vat Blue and the Prevention of Double Colours, &c.

The following articles on woollen piece goods from Dr. Reimann's *Färber Zeitung* will interest, and be of use to, many of our younger readers:—By the use of inferior and, consequently, those kinds of indigo which are poor in indirubine, the dyer is often compelled to produce the desirable red tinge in his fine vat blue goods by dyeing with red or violet dyestuffs. For quite a number of years, archil enjoyed a certain monopoly as a substitute for supplying the wanting red tinge. This place it enjoyed, doubtless, only because of its blue tinge and the commodious way of using the dyestuff. The process generally employed was by entering the well scoured piece goods in a hot bath of weak archil paste, which was heated to boiling with the pieces in, until the cloth had taken the desired red tinge. It was then dyed direct in the vat. Although the goods treated in this manner had assumed the nice blue violet tinge, which was the characteristic of the red Bengal indigo, it did not last long. A few hours of bright sunshine sufficed for bleaching the archil. Equally disastrous results were obtained by using methyl violet, fuchsine, saffranine, and other aniline pigments. These were used as tops after the goods had already been dyed in the vat and cleaned. With the introduction of the fast azo pigments of a blue red colour, such as Bordeaux B, amaranth, cloth red T. R. B. O. &c., the dyer had a series of cheap dyestuffs at command, and it is sometimes difficult for him to choose the most appropriate. The only difficulty experienced with them was that they were too quickly absorbed by the wool fibre, in consequence of which, they dyed unequally, and were hard to be stripped after having become fixed. Experienced dyers soon conceived the idea of topping these dyestuffs in a feeble acetate bath, by which process, the great problem of dyeing them evenly appeared to be solved. But here also their disadvantages were plainly perceptible. The feeble acetic acid dissolved the lime adhering to the goods after coming from the vat, which next precipitated the diazo dyestuffs as lime salts. In this manner, the surface of the pieces became covered with insoluble lime lakes, which could not be removed even by a thorough washing with fuller's earth, and betrayed their disagreeable presence by rubbing with a piece of white paper. The only remedy was a thorough scouring of the vat blue cloth with fuller's earth in the cylinder washing machine, rinsing with clean water, and removing the lime with diluted hydrochloric acid. Another rinsing in clean water removed the residues of chloride of calcium, after which the brightening was effected in a feeble acetate bath. The introduction of the alizarine dyestuffs gave rise to the hope that their red and violet representatives would become the means of brightening the indigo. Attention was concentrated especially upon the galleine, the red violet tone of which alone imparts a certain fullness to the indigo blue. A previous mordanting, however, is the only disadvantage connected with its use. A loss of dyestuff is experienced by directly dyeing with the galleine, and its use entails the creation of the dyer's greatest enemy—smutting. In order to produce a perfectly fast blue-red or blue-violet direct upon vat blue goods, it is necessary to have recourse to the alizarine sulpho acids. They are found in commerce in the shape of an orange yellow powder, which is easily soluble in water, and readily fixed upon wool in the presence of metallic salts. The advantages of this method are not to be ignored. The dyestuffs are fast against light and fulling, are easily shaded by different metallic salts, and dye easily, which is the main point. The method is as follows:—The pieces are bleached, washed, freed from lime with diluted hydrochloric acid, again washed, and entered into a lukewarm bath consisting of a diluted solution (according to the desired tone) of alizarine S, and the equal weight (of dyestuff) of sulphate of iron. The pieces are reeled in this bath, and heated to boiling, which can be effected very quickly. By an addition of equal parts of alizarine S and sulphate of iron, the shade from pure blue to red violet can be produced. Rinsing is only necessary after dyeing. Treated in this manner, the shade of the indigo blue is not alone tinged reddish, but it also increases in depth, and, in this manner, it is possible to save indigo. By taking more sulphate of iron than indicated, the tone becomes darker, but also loses in redness. If less stress is laid on the depth of the colour, and a pure red only is to be topped, take, in place of an iron salt, an alumina salt, such as sulphate of alumina. From this it will be seen that the dyer can regulate the dye according to option. The use of sulphates in this method, of course, demands that the piece of goods be perfectly freed from lime, as, otherwise, a sulphate of calcium would precipitate upon the fibre. If the dyer wishes to avoid the washing with hydrochloric acid, it is better to use the chloride of iron, or alumina, when dyeing with alizarine S. When using either of these salts, it will be found that a calcareous water is beneficial rather than injurious.

### THE PREVENTION OF DOUBLE COLOURS.

The double colouring of woollen piece goods is generally due to errors in the preparatory treatment. These errors are oftentimes unnoticeable, because the preparation of the pieces is generally executed by hands other than those of the dyer. The pieces frequently still contain traces of soap and other impurities, and, when they enter in this condition into the dye bath, the soap separates fatty acid, which renders the absorption of the dye difficult, and partly prevents it. The acid

condition of the dye bath essentially favours this occurrence, and if it is to be met effectually, the pieces must be submitted to another cleaning before they are dyed. For this purpose, prepare a water bath of 144° F., and add to it per 100 litres [106 quarts] water, from 50 to 100 grammes [771 to 1,543 grains] of sal ammoniac. Stir well, and reel the pieces through for from one-half to one hour, reel out and into a clear water bath of 144° F., which continue for thirty minutes. During the reeling, examine the piece against the light; if it contains spots which have absorbed either little, or no, humidity, they are to be treated specially with the ammonia fluid. The piece scoured in this manner is now ready for dyeing. Take care, however, to enter only the squeezed piece directly into the mordanting or dye bath. The dragging of the piece upon the floor of the factory, as well as any undue carrying or throwing about, must be prevented. If an intermission between the last scouring and the dyeing cannot be avoided, lay the piece under a double cover, the lower one to be of pure linen, the upper of some water-proof material. Take care, while in this waiting position, that no condensed water from the roof, the different parts of machinery, pipe conduits, shafting, etc., drops upon the piece. Take care, as well in mordanting as in dyeing, that all crystallized salts, such as alum, tartar, sulphate of copper and iron, extracts, tan colours, etc., are never entered in substance direct into the bath. These are to be dissolved first under all circumstances, and the solution is to be poured in, after which the bath is well stirred. Satisfy yourself that the solution has been completely effected, and that no undissolved mordanting or dyeing matter still clings to the bottom of the vessel used for dissolving. All the dyestuffs are to be dissolved into a liquid solution. Lustrous films upon the surface of the solution must be removed. If this is not attended to, the whole salt crystals will deposit upon the bottom of the kettle and vat. The pieces will drag over them and, subsequently, absorb the colour unequally. Extracts and artificial dyestuffs, if badly dissolved, result in producing double colours by clinging to the goods and coating them with a resinous film. Of the artificial dyestuffs, archil, indigo carmine, etc., only so much must be added to the dye bath as will be readily absorbed by the goods. Every excess is dangerous. For aniline dyes, a greater quantity of sulphate of magnesia is to be added to the dye bath; for azo colour, indigo carmine and archil, either tartar preparation or alum. The tartar preparation is to be a well crystallized, absolutely dry, salt. Avoid mixtures prepared from sulphuric acid and impure Glauber's salt. If the dyeing process is performed in two baths, by separately mordanting and dyeing, the piece is to be treated, after the mordanting, according to rules. It must not be thrown about, dragged, and, while wet, hung like a sack. It is best to dye immediately after mordanting. While other mordants exert their action upon wool only at the boiling temperature, chrome acts also in the cold, and if the goods mordanted with chrome are left to lie only for a short time, the latter will drain into the lower folds of the piece, and this, when dyed, will show the ugly clouds and spots. It is necessary, therefore, after mordanting with chrome, to either squeeze the goods or to dye at once, or, in case it is impracticable to do either, to rinse well at once, and to enter the piece into the cold mordanting bath until ready for the dyeing operation. It is advisable, at any rate, to rinse the goods at once after having been mordanted with chrome. The dyer will not hear much complaint about unequal dyeing if he closely adheres to these rules. If it should, nevertheless, occur, it is proof that the detailed order has not been faithfully observed. Let the dyer choose for his governing motto:—"Depend only upon yourself." In order to equalize two coloured pieces, it is necessary to first strip the colour until the double colour disappears. This is done by boiling in a bath of tartar preparation, and, in this case, use a crystallized tartar preparation of some reliable make. The presence of a full acid is strictly to be avoided, as it would exert a corroding effect. The strength of the bath cannot be stated, but 10 kilogrammes goods [22 lb.] would require about  $\frac{1}{2}$  kg. [1 lb.  $\frac{1}{2}$  oz.] tartar preparation. When the colour has been stripped as far as necessary, wash the cloth, treat with ammoniac, as specified, and observe the above given rules.

### The Finishing Room—

#### Scouring Goods—Scouring Before and After Fulling—Warm and Cold Water Scouring.

After our consideration of the subjects of calculations and of soaps, which are not really processes in the art of finishing, we now return to our work again, and look into the next important step in wet finishing, namely, scouring. This process, like the one last considered, exercises a most important bearing on the appearance of the finished fabric, and it is only successful where good judgment and common sense are brought constantly into play. As the goods come from the fulling mills, we should see that they are at once pushed ahead through the washers. It never pays to allow wet and soapy cloth to lie about the room awaiting the succeeding operations. The colours are always liable to suffer from such treatment, and a result may be expected which no after treatment of whatever sort can fully overcome. The question as to whether or not scouring before fulling pays well enough to warrant its universal adoption is still rather an open one. But this is true only in some cases. It must be admitted that there are classes of goods which almost demand such treatment, and the finisher who fails in this particular will soon

have reason to regret his course. There is no doubt that, in all cases, such treatment improves the finished appearance of the piece, and it also very naturally facilitates the fulling process, especially where it is practised on goods which require long fulling, and which are to receive a fine and costly finish. But the question as to whether it pays well enough in finer appearance and more saleable stock in any and every case is quite another thing. On the common run of tweeds and home-spuns, we should be slow to adopt the practice, but with fancy silk mixes, worsteds, and doekskins, there is no doubt that it can be done with great success. In scouring goods thus before fulling, it is best to first wet them enough to make them moist throughout, then to add enough soap liquor, say half a barrelful to the piece, to start the grease and dirt well through the whole cut: they will scour quite as hard now as they would had they been fulling first. Run this way for several minutes and rinse well in lukewarm water, then, after extracting, they are ready for the fulling mills. Of course, if this scouring is done before the goods are darned or mended, it will be necessary to dry as well as to extract; but where fine sewing is required, it will be found absolutely necessary to pursue this course if the best results are to be obtained. In scouring after fulling, there are two plans which may be adopted, either of which will give satisfaction, but, in most cases, we think the latter will give the best results. These two methods depend entirely upon the facilities afforded to the finisher, and if he cannot have the necessary apparatus for the one, he must get the best results he possibly can from the means at his disposal. The two methods we mention are the cold and the warm processes of scouring. For scouring and washing purposes, a thin soap liquor is always preferable. Two ounces of a hard soap and one and a half ounce of alkali will make a very desirable scouring liquor when mixed with the appropriate quantity of water. In the cold process of scouring, we adopt the following:—Run the goods into the washer, and, after securely sewing the ends together, start the machine; then pour on four pails of the liquor to each piece, and run about half an hour in this way. If all is right, a good rich lather will be produced, but if such is not the case after this length of time, we may be pretty sure that something is wrong, and the goods will not be clean, but, if all is well, we now open the draw-off gates and, at the same time, direct a stream of water on the goods to rinse away the soap and dirt. The time necessary to properly rinse the goods will, of course, vary with the size and strength of the stream, and the amount of dirt in the goods. If the stream is moderately strong, from twenty to thirty minutes will be all that is required to remove all traces of the soap, but, if the supply is small, then more time will be required to do the work properly and well. Then, when the rinsing is complete, the draw-off gates are closed, the water is shut off, and the goods are allowed to drip for five minutes or so, when they are ready for bur dyeing. As we said above, this method is not so good in practice as the warm method of scouring, and, whenever it is possible, the latter should be the course pursued. In warm or hot water scouring, it is well to begin the operation in the fulling mill by the addition of a little soap just before the goods are taken out, then run into the washers, sew the ends together, and start up as before. Instead now of adding soap, apply simply warm water to the amount of about four pails to each cut, and allow to run about twenty minutes, then draw off and apply, after the gates are closed, about three pails to a piece of the soap liquor as above described. The application of the soap to the fabric, after most of the dirt has already been removed, has a very desirable effect which cannot be fully appreciated until it is tried and its results compared with the other methods in practice.

**SOAPS FOR SCOURING—KEEP CLOTHS OF SAME WEIGHT TOGETHER—RINSING.**—As to soaps for scouring, we may say, further, that it is quite possible to use the very same soap as we use for fulling. But, whatever soap we may use, it will be necessary to thin it by mixing it with part of its weight of water. To the half barrel of soap add half a barrel of water. It is best to use the liquor as weak as possible and to allow it to gain the desired end rather by increasing the quantity of it used than its strength. In using such a liquor, we should run about twenty minutes in the soap, and then turn on a little lukewarm water, just enough to partially thin the soap and lather. Run a few minutes longer, and then turn on a little more water. At last, run off the soap and rinse well in clean water for three-quarters of an hour or so, and the goods will then be ready for the extractor. In scouring four or more pieces on the same rollers, be careful that they are all of nearly the same weight per yard. If a light-weight piece is run along-side, or between, two heavy ones, the lighter piece does not receive the full pressure of the rollers, and, hence, cannot be properly cleaned. If the goods are exceptionally dirty, it is sometimes advisable to give them a rinsing in warm water before the application of the soap, and then to proceed with the operation as above indicated. If the fulling has been properly done, and the grease and dirt well raised in the fulling mill, and a good clean lather is obtained in the washers, there is but very little possibility of a bad smell remaining in the goods after all is finished. But, when we have to re-scour goods, we must be very careful that our soap is strong enough and of proper consistency so that it shall not turn watery or die out before the operation is complete. If such a condition of affairs obtains, we shall have a bad odour in our fabric that cannot possibly be afterwards removed. For scouring worsteds or cassimeres, a good oil soap of the proper body, and mixed with equal parts of soda ash, will do the work nicely. This soap may be reduced to suit the case by the addition of water before using on

the goods. The body of the soap plays an important part in the scouring of worsteds, for, the heavier the body of the soap the more felt will be produced. As, in worsteds, felt is not exactly what is wanted, the body should be reduced as low as possible, so that it will merely start the grease and dirt. Take two ounces of good hard soap, with the same amount of alkali, and add to a gallon of water, and the result will be all that is required. If the colours will stand a little more alkali, it may be added without danger of trouble arising. Wet up the worsteds evenly, about the same as they would be moistened in the fulling mills, adding about four pails of the soap to each piece, then let them run long enough to allow the grease and loose dye to get started. Rinse this off, and then drain, add more soap now, about half as much as before, and run the goods until the lather comes up thick and white, and until all foreign matters have had plenty of time to get thoroughly started; then give the final rinsing with warm water, followed by cold, for three-quarters of an hour, and the pieces are ready for extracting. For rinsing, it is impossible to get too large a flow of good pure water. Warm water pipes should be just as convenient for use as the cold, but the flow does not need to be so abundant. Warm water is much more effective when applied through a pipe than with a pail, for the simple reason that it can be more evenly distributed. Goods that full from two to six hours, and are all, or nearly all, wool, will scour out with a light soaping and only one scouring. It is even possible to scour such stock out with warm water and the soap that remains in the goods from the fulling mills. If a washer full of goods lather up nicely, it is impossible to rinse them out by simply dashing on a lot of cold water and allowing to run a few minutes; neither will an insufficient amount of warm or hot water accomplish the desired end. It is always best to commence and thin out the lather. Let on a little warm water—never use hot for this purpose—and then open the gates and let off some of the surplus lather and dirt. Shut the gates then, and let on a little more water. Repeat this as often as necessary until the operation is complete and the goods are entirely clean; then when cold water is run on at last you may be sure the result will be satisfactory. As a last hint, let us say that it is best, at all times, to have in the washer a sufficient quantity of liquor. It does not necessarily have to be strong in alkali or heavy in body, but there should be plenty of it, and the fabric wants to be evenly and completely saturated throughout. It is impossible to wash a pair of dirty hands in a teacupful of warm water, even if a whole bar of soap was to be used, and the same common sense ideas must be carried out in the manipulation of the washing machines, and in the use of the scouring soaps and alkalies.—*Boston Journal of Commerce.*

### Textile Exhibits at the Paris Exhibition.

In April of last year, Sir Henry Mitchell, the President of the Bradford Technical College, most generously proposed to the Council to defray the expenses of the heads of the technical departments of the College and of two students from each department to visit the Paris Exhibition, that they might have an opportunity of inspecting the valuable collection of exhibits relating to their several departments. The Council gladly availed themselves of the President's offer, and have now presented to the constituents of the College reports submitted to them by the head masters in the textile department, art department, dyeing department, engineering department, by Mr. Ashenhurst, Mr. Stephenson, Dr. Knecht, and Mr. Charnock, respectively.

#### THE TEXTILE EXHIBITS.

The exhibit, which probably possesses the greatest interest for Bradford, is

#### THE ROUBAIX COLLECTION,

comprising, as it does, a very varied collection of fabrics. The bordered skirts or robes and all-wool figured dress goods are very good, showing a fine display of taste in floral design, as well as in fancy stripes and printed goods. In all these the excellence of design is very marked, and, although there cannot be said to be anything new or striking in the cloths exhibited, one cannot but recognise the merits of the designs and the pleasing manner in which they are got up. The case for all-wool and fancy goods may be simply described as magnificent. The fancy stripes and figured robes could scarcely be surpassed for colour and design, one notable feature being that, though the ground cloths in themselves were not of any very novel or costly character, they were made valuable by the excellence of the designs worked upon them. There are some stripes in very good cloths and figured materials to match them, as also some very good checked cloths. One striking novelty in this case was a cloth of the character known as the "Oatmeal" in cotton goods, but carried out in all-wool, and the design developed so as to present definite forms instead of the indefinite crape effect. This seems to offer a suggestion which might well be worked upon for the production of fabrics of a pretty and pleasing type, and not difficult to manufacture. There are also novel fabrics in a kind of broken figured repp effect, which are very effective and pretty, and sufficiently distinct from the old repp cloth of former days to admit of its use in fancy dress goods without being an actual revival of the old style. Many of the designs were very bold and effective, and artistic in their arrangement. In the preliminary stages of manufacture, the cases of Messrs. Isaac Holden and Sons, of Crois, and Mr. Jonathan Holden of Rheims, are perfect, from the



technological point of view. The beautifully combed tops of fine wool, spread out, are quite a picture in themselves, and show to perfection how the fine fibres of wool can be separated and laid together to form a film and thread. Coming now to another section, the cotton cloths of the French manufacturers deserve some attention, and particularly is this the case with respect to the

#### PRINTED FLANNETTES.

The beauty of design and rich colouring in this class of goods cannot be too highly spoken of, and there is certainly nothing in the exhibits of any other country in the same class to approach them. It will be well for the manufacturers of wool goods for skirtings, dressing gowns, tennis, and other costumes, to look ahead, as some of them are very beautiful, and will, no doubt, take the place, in no small degree, of the wool fabrics which have been used for such purposes. Cotton velvets and cotton damasks are very well represented, as they are also in the Belgian section. In cotton goods, the English manufacturers are well represented by a few leading houses. The

#### EXHIBITORS FROM THIS DISTRICT

are very few, Messrs. Salt, Sons and Co. coming first with their fine case of sealskins and plushes. The range and variety is very wide, embracing almost every class of mohair and silk plush for mantles, jackets, and upholstery purposes. Some of the figured goods are very rich, as well as the beaver trimmings. Several of the printed fabrics are extremely rich in both design and colour. So far as range of colours goes, one could scarcely complain, as they have a shade card containing no fewer than 280 colours to select from. Messrs. Lister and Co., Manningsham Mills, have contented themselves with showing their sewing silks, and Messrs. John Foster and Sons, Queensbury, have a small, but fairly representative, case of their well-known goods. Amongst them are a few sealskins, figured mohairs, glaces, coatings, vestings, and other cloths, and, although the collection is small, it is certainly excellent. In woollen goods, and articles for men's wear, England is rather better represented than in ladies' fabrics. Messrs. John Carter and Co., Halifax, have a good show of worsted coatings and suitings, some of their designs being very neat. For quality in woollen goods, there is certainly nothing in the Exhibition to equal the West of England manufacturers. In worsted coatings, trouserings, and suitings, Belgium seems to take the lead, some of the fabrics in design, quality, and finish, being exceptionally good. In novelty of design, there is no doubt they lead the way, and in the other qualities they are well to the front. Messrs. Stansfeld, Brown and Co. have a case of their well-known serge de berris, lastings, &c., with which there is nothing in the Exhibition to compare. In the Russian section, there are some exhibits of fabrics which must not be passed lightly over. In printed cotton, mixed dress goods, tapestries, &c., though not equal in style and design to some of the other countries, they must not be despised. Evidently, the designs and colourings are suited to the tastes of the people for whom they are intended, and, although at first sight rather crude in their character, they improve on acquaintance. In conclusion, the impression left with respect to the fabrics is that in the general run of goods there is

#### NOTHING SHOWN SUPERIOR TO ENGLISH MANUFACTURE.

The colours generally are good, and mark very decidedly the direction of taste. The artistic merit of many of the designs is great; many cloths of a comparatively cheap make are made valuable by the ornamentation put on them. We have room for considerable improvement in this direction, and the attention of students cannot be too strongly directed to the necessity of paying attention to art studies. One important fact cannot be overlooked. On comparing the fabrics produced in the Bradford district, at the present time, with those shown at the previous exhibition, there is

#### A MARKED ADVANCE.

both in design and character of cloth, and on comparing many of the English and French fabrics, of the present day, the comparison is in favour of the English, more particularly in all-wool dyed goods. In plain and figured mohair cloths, the English are far ahead of all others. In

#### DYED WOOLLEN AND WORSTED YARNS.

the exhibits are good, but not numerous, but in piece dyed and finished woollens and worsteds, of almost every class, there is a fine display. Our general opinion of these exhibits is a most favourable one, not only as far as colouring and finish are concerned, but also in the general arrangement. Several dyers also exhibit water-proofed (porous) fabrics. We did not, however, notice anything of a strikingly novel character, although, if we had had the assistance of a merchant or buyer possessing a large experience in these goods (which, fortunately, we did not possess) one or two things might have been pointed out to us. It would, therefore, be useless for us, under the circumstances, even to attempt a critical report on such a delicate matter. Our general impression was that there was nothing there which could be done in England. It is a remarkable fact that no English bleachers, dyers, or printers, have exhibited

A Fine Art and Industrial Exhibition is to be held at Leeds, from May to October, this year, and applications for space can be made to J. Davis, Commercial Buildings, Park Row, Leeds.

## Manufacture of Textile Fabrics in Diarbekir.

The *Bulletin Consulaire Français* (October, 1889), contains the following information respecting the textile fabric industry at Diarbekir:—

**SILKS.**—There are at Diarbekir 100 looms working silk draperies figured with gold, called *tchatchafs*, which serve as cloaks for ladies. Each loom employs one workman, who can make one dress weekly; he earns 25 piastres per week. These dresses are sold at about £2 Turkish. This industry leaves scarcely 5 per cent. profit. 20 per cent. of the goods manufactured are consumed in the vilayet; the remainder being exported to Aleppo, Kharpout, Sivas, Bitlis, Van, Erzeroum, and Trebizond. Another 100 looms make a kind of *moire* called *guzi*. Each loom employs one man, who can produce, weekly, five pieces of about six metres each. These workmen earn five piastres per piece, or 25 piastres weekly. This silk is worth half a Turkish pound per piece. Half of this production is consumed on the spot, the other half is exported to Kharpout and Sivas. This merchandise scarcely yields a profit of 5 per cent.

**TISSUES OF SILK AND COTTON.**—30 looms manufacture this stuff. Each loom occupies one man, who can produce eight pieces weekly. The cost of labour per piece is 2½ piastres. The profit is only one piastre per piece, which is sold at 12 piastres. 25 per cent. of the goods manufactured are sold on the spot, the rest are exported to Kharpout and Sivas.

**COTTON TISSUES.**—This industry employs 200 looms. At each loom works a man who produces eight pieces weekly. The cost of workmanship per piece is two piastres. Each piece is sold on an average at ten piastres, and only leaves one-half piastre profit at the most. 12½ per cent. of the production are sold at Diarbekir, the remainder is exported to Kharpout, Van, and Bitlis.

Formerly, the production of silk was very large, and the trade in this article very flourishing. It is almost nil to-day. The Government collects annually a tithe of £600 Turkish under the head of taxation. The production of silk must, therefore, be valued at a minimum amount of £6,000 Turkish.

## The Manufacture of Flannels.

For some time past, there have been innumerable complaints of the periodical dullness which pervades the trade in flannels and such like fabrics, and many are the reasons given for the aspect of the industry that keeps manufacturers in a continual state of anxiety. To our mind, many of the reasons advanced have little foundation in fact. Years ago, flannels were, with some few exceptions, made and used for ladies' and gentlemen's underwear, but, within recent years, the greater part of the demand for this class of goods has been superseded by the comparatively recent introduction of knitted materials, which are now being made in such abundance in the Leicester and Nottingham districts. Of course, there are many uses to which flannel can be put, both for wearing apparel and other purposes for which the knitted class of fabrics is not adapted, still, notwithstanding this, manufacturers of flannels, unless they can devise some improvements in their cloths to give them a new lease of life will undoubtedly have to enter the textile field in another direction. In the Lancashire, Yorkshire, and other woollen districts, efforts have been made during the past few years to infuse new life into their industry by the production of tennis, costume, and such like fabrics, and, in many cases, considerable success has attended manufacturers, who have launched out in this direction, still, those who have done this, are only few. Others have made efforts in other ways, but, on the whole, keen competition has killed their endeavours. To our mind, the main reason for the periodical dullness of the flannel trade is owing to the determined advances made in the wool knitting industry, and as the tendency seems to be to the further development of this class of fabric, manufacturers of flannels would do well to direct their attention to this branch. The manufacturers of the North of England, Scotland and Wales, made the flannel industry, a success formerly, and, undoubtedly, like good fortune would crown their efforts if they went into the knitting industry. Some few firms in the cotton and worsted districts have, for some time past, carried on the business with advantage, and it behoves others who wish to maintain their prosperity to follow in their footsteps. We know that to change one's trade entails much expense, but, a few years ago, the manufacturers and spinners of Bradford had a long spell of bad trade owing to the freaks of fashion, and, after hoping that the tide would turn again in their favour, and finding things gradually becoming worse, they were in a manner compelled to do what had been advised by competent judges long before, viz.:—to change their machinery for such a class as would produce the kind of goods then in fashion. The advice was followed by some of the larger firms, and the results were such that a general alteration was made, and Bradford has since then enjoyed a fairly good trade. What held good in their case would, we venture to assert, prove a success for the manufacturers of flannels and such light fabrics.

The *Journal de la Chambre de Commerce de Constantinople* for December says Spain has organised a floating exhibition. The "Comde de Vilana" steamer, especially chartered for this purpose, has recently entered into the waters of La Plata. This exhibition has, it is stated, been very successful.



## ORIGINAL DESIGNS.

The first coloured plate contains a pattern for a Toilet Quilt, designed by Mr. R. T. Lord.

The second design has been specially drawn for Dress and Mantle Fabrics, by the same designer.

On the third plate is a pattern for a 5-frame Brussels Carpet. One repeat of the pattern represents  $\frac{1}{2}$  yard in width, also by Mr. R. T. Lord.

## MONTHLY TRADE REPORTS.

**LINEN.**—The aspect of this branch of industry has changed but little during the month. On the whole, there has been a slight improvement in demand in most departments, and this may be noted especially in the call for damask table linens, a branch that has only been quiet for some time past. In domestic fabrics, both of a plain and fancy character, good orders have been booked, and the same may be said of sheetings, drills, and carpetings. Other descriptions have ruled about as last month. Manufacturers generally are hopeful as to a fair trade being done during the present year, but, although orders are more numerous, there are many complaints of the low prices.

**WOOLLEN.**—With the exception of the earlier part of the month-trade in the woollen districts has been generally good. There has been a decided increase in the demand for plain and fancy serges, a cloth which has recently been in much favour, and which seems likely to have a good run for some time to come. In this kind of fabric, some entirely new effects, as regards design, colour, and finish, have been brought out, and these have met with much encouragement, large orders having been booked for next season's cloths. The quantity of serges sold has, to a certain extent, had its effect upon the plainer kinds of worsted coatings, the demand for which, in consequence, has fallen off to a slight extent. The call for fancy worsteds has again been good, and the same may be said of Cheviots, tweeds, and such like cloths, of fancy patterns in various qualities. The business in fabrics for the ready-made clothing trade has also been of a satisfactory character, and the various descriptions of mantling cloths have secured favourable notice. Prices of nearly all descriptions have kept very firm, and, in some classes, rates have had a hardening tendency.

**WOOL.**—In raw material, a rather depressed feeling was shown during the month, but upon the opening of the London Sales, at the full closing rates of the last series, a decidedly firm tone was imparted to the markets, and dealers in both English and Colonial wools have fully maintained these rates in their quotations, and prices have had a hardening tendency. The yarn branches have been rather quiet. Spinners have been busy on old orders, but new business has only been meagre; the prices generally offered having been under recent rates, spinners have preferred to work out present orders before entering into new contracts. Since the opening of the London Sales, spinners report that rather better prices are offered by buyers, and hopes are entertained of large orders being booked shortly. A fair business has been done in the dress goods branches of the piece trade, merchants ordering moderate quantities for the spring. The coating branches have been very quiet, and it is with great difficulty that orders can be secured to keep machinery employed. The trade in this branch with America has fallen off considerably, but a slight improvement was noticed during the last few days of the month.

**COTTON.**—The transactions during the past month, in nearly all branches of the cotton trade, have been below the average and, from a producers point of view, unsatisfactory. Raw material has advanced in price. Yarns were in fair demand during the earlier part of the month, but, prices having advanced, transactions became smaller and were eventually confined to such yarns as were urgently required for consumption. A moderate business has been done for India, and the same may be said of the Continent, whilst, for Japan, a decided improvement has been noticed. Buyers for home consumption have only operated sparingly, as offers for cloth afforded no encouragement to purchase largely. In the cloth branches, a fair business has been done for India, China, and Japan, and a good demand has been experienced for South America and Egypt, some large orders having recently been placed. Buying for the home trade has ruled moderate.

**LACE.**—It was confidently expected that a decided improvement would be experienced in the various branches of the lace trade with the opening of the year, but, with some slight exceptions, business has only been moderate. Although many new features have been introduced into millinery laces, their sale has not been up to expectations. Valenciennes and Vandyke laces have sold fairly well, and the same may be said of trimmings. The curtain branches have had more inquiry, and are actively employed—both for home and foreign account. The finer qualities meet with most favour. Silk goods have only been in moderate request. Higher rates for cotton goods have been generally asked, and this has had a tendency to retard business.

## ODDS AND ENDS.

The Board of Trade returns for January show that the imports for the month amounted to £38,143,850, being an increase of £85,532, as compared with the same month last year. The exports for the month amounted to £21,586,752, being an increase of £1,059,715 as compared with January of last year.

A correspondent at Meshed writes to a Caucasian newspaper that the sale of English goods is becoming very large in consequence of the absence of Russian wares in the native markets. It was only the other day that Russian correspondents were telling us of a Russian commercial exhibition at Teheran, and of a superabundance of Russian commodities all through Khorassan, which had to be sold at a loss, the markets having been overstocked.

The *Deutsches Handels-Archiv* states that the goods which find the most ready market in the Turkish ports of the Black Sea are Turkey-red cotton threads, cloth stuff, both all wool and union, chemical products, and dye-ware. There is room, says the same authority, for a very great development of trade in the Black Sea, and merchants would do well to let themselves be represented by active and capable agents who have made themselves acquainted with the character of Turkish trade and the requirements of the inhabitants.

The native industry of Tunis includes only two textile articles of export, viz., cherchias, or caps of red wool, and woollen tissues. The former are produced chiefly at Zaghouen, and are exported to the whole Mussulman world. Tripoli imported one-third of them, or 101,000 frs. out of 325,000 frs. in 1887-8. Woollen tissues are manufactured a little everywhere; the blankets of Djérba are famed, as well as the carpets of Keirouan; one-third are imported into Egypt, and one-third into Tripoli. The total value in 1887-88 was 697,000 frs. Tunis further exports, but almost exclusively to Algeria, 150,000 frs. worth of silk and cotton tissues which, imported from England in an unbleached state, are dyed in the Registry.

A special meeting of colonial wool importers was held recently at the London Chamber of Commerce, under the presidency of Mr. H. M. Paul, to hear a communication from Sir Albert K. Rolit, M.P., who introduced the deputation which waited upon Mr. W. L. Jackson, M.P., at the Treasury, on the 16th January, to urge that, in view of the wide discretion which the Merchandise Marks Act gives to the Customs, the requirement as to the exact place of origin being marked on raw and unmanufactured products should not be insisted upon in the case of wool coming from British colonies. We understand that, as the result of the representations made by the deputation, it is not intended to insist on bales of colonial wool being marked in any other manner than has been customary in past years, and that more recent requirements in this respect will not be enforced.

An exhibition is to be opened in Kingston, the chief city of Jamaica, in January, 1891. It is to include island products, manufactures, and works of art, as well as exhibits of works of art, machinery, and industrial and agricultural products from Great Britain and other countries and colonies. All exhibits are to be arranged under some of the following heads:—1, Raw Materials. 2, Implements for obtaining raw materials. 3, Machines and processes used in preparing and making up the raw materials into finished products. 4, Manufactured goods. 5, Education and 6, Fine Arts, Science, and Literature. A Committee has been formed in London, representing Jamaica's interests in the United Kingdom, to co-operate with the organising body in Jamaica. As a proof that the scheme has taken practical shape, we may state that, out of a guarantee fund of £20,000 required, £16,000 has been already promised in the Colony. Communications and applications for forms and regulations must be addressed to the Chairman, 1, Fen Court, London, E.C.

According to the last report of the United States Consul-General at Frankfort-on-the-Maine:—"About 64 per cent. of all the labourers in Germany are engaged in what are known as house industries (weaving, knitting, wood carving, &c.) at home in their own little rooms. This large part of the working population is almost entirely neglected, as far as any benefit from general legislation in regard to the working classes is concerned. According to statistical returns, the number of those engaged in these industries averaged, during the years from 1882, some 476,080, of whom 128,071 were apprentices. These statistics are furnished by the workmen's societies. The employers report 644,980 persons employed, of whom 150,523 were learners. From the following, the importance of the house industries may be seen, and their relation to all the industries of a given branch. Out of every hundred concerns engaged in the following trades the annexed per-centage was employed in the house industries:—Silk spinning, 95.2 per cent.; finishing of hosiery and knitted goods, 92 per cent.; silk weaving, 86.2 per cent.; cotton weaving, 82.6 per cent.; gold and silver wire drawing, 82 per cent. The house industries have thriven, as all industries must, in the long run, where they found circumstances most favourable to their existence and permanency. The largest number are in Zwickau, a district of Saxony."

THE JOURNAL OF FABRICS AND TEXTILE INDUSTRIES.

12TH FEBRUARY, 1890

DESIGNED BY R. LORD.



TOILET QUILT.



February 12th, 1890.

THE JOURNAL OF FABRICS AND TEXTILE INDUSTRIES.

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DRESS GOODS.



THE JOURNAL OF FABRICS AND TEXTILE INDUSTRIES.

12TH FEBRUARY, 1890.

DESIGNED BY R. LORD.



BRUSSELS CARPET.

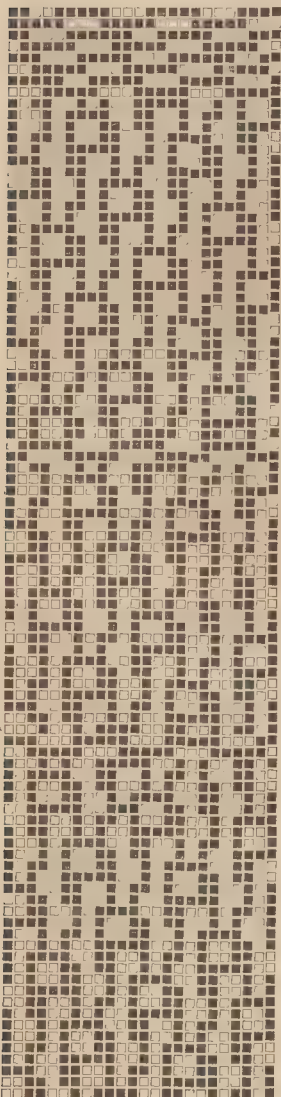
## FASHIONABLE \* DESIGNS.

— 50102 —

\* \* \* \* \* A Supplement, containing Woven Specimens of the Designs given on this page, is presented each month to those of our Subscribers who manufacture Cloth for Ladies' and Gentlemen's wear.

## Worsted Suiting.

No. 623.



## Ends. Warp:—

5 Black, 2/40's w'sted.  
1 Twist, "  
1 Black, "  
1 Twist, "  
4 Black, "  
36 Slate, "  
1 Twist, "  
1 Slate, "  
1 Twist, "  
90 Slate, "  
1 Twist, "  
1 Slate, "  
1 Twist, "  
36 Slate, "

180 ends in pattern.

## Picks. Weft:—

2 Twist, 2/56's w'sted.  
30 Black, "  
2 Twist, "  
78 Black, "  
2 Twist, "  
30 Black, "

144 picks in pattern.

7,620 ends in warp.

120 " per inch.  
15's reed, 8 ends in  
a reed.  
88 picks per inch.  
63½ inches wide in  
loom.  
56 inches wide when  
finished.  
18½ oz. cloth.

Design.

## Woolen Trousering.

No. 624.



Repeat once. Design.



Repeat once. Draft.

## Ends

Warp:—1 Brown, 13 skeins } 5  
1 White, " } times.  
1 Red, "  
1 White, "  
1 Brown, " } 4  
1 White, " } times.  
1 Blue, "  
1 White, "  
1 Brown, " } 13  
1 White, " } times.

## Pegging Plan.

Weft:—1 pick Black, 13 skeins.  
1 " White, "

2 picks in pattern.

2,240 ends in warp; 34 ends  
per inch: 8½ reed, 4 ends in a  
reed; 30 picks per inch: 66  
wide in loom; 56 inches wide  
when finished. 21½ oz. cloth.

48 ends in pattern

## Worsted Trousering.

No. 625.



Pegging Plan.

7,560 ends in warp; 120 ends per  
inch; 15's reed, 8 ends in a reed: 84  
picks per inch; 63 inches wide in loom;  
56 inches wide when finished.

14½ oz. cloth.

## Ends. Warp:—

1 Blue, 2/44's worsted } 7  
1 Brown, " } times.  
1 Red, "  
1 Brown, " } 5  
1 Blue, " } times.  
1 Brown, "  
1 White, 40/2's silk.  
1 Brown, 2/44's worsted } 7  
1 Blue, " } times  
1 Brown, "  
1 White, 40/2's silk.  
1 Brown, 2/44's worsted } 5  
1 Blue, " } times.  
1 Brown, "  
1 Red, "  
1 Brown, " } 7  
1 Blue, " } times.

## Ends. Warp continued.

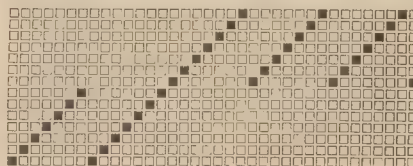
1 Brown, 2/44's worsted.  
3 Twist, "  
7 Brown, "  
3 Twist, "  
6 Brown, "  
3 Twist, "

92 ends in pattern.

## Weft:—

1 pick Silk.  
1 " Brown.  
1 " Silk.  
81 " Brown.

84 picks in pattern.



Repeat eight times.

Draft.

Design. No. 625.





## Mantle or Costume Cloth.

No. 626.



Warp, 13 skeins woollen, snowflake, spun through white flocks.  
Black weft, spun through coloured flocks, 12 skeins woollen.  
Slate weft, spun through coloured flocks, 30 skeins woollen, 2 picks working together as one.

Design.

1,008 ends in warp; 16 ends per inch; 8's reed, 2 ends in a reed; 24 picks per inch; 63½ inches wide in loom; 56 inches wide when finished.  
12 oz. cloth.

Warp all White.  
Weft:—  
1 pick Black.  
1 „ Slate (2 as 1).

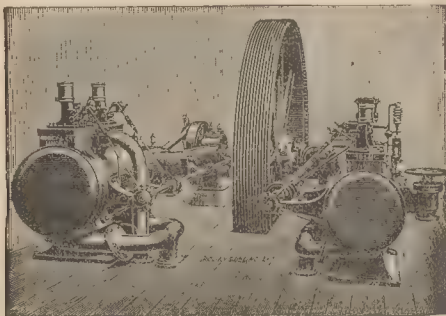
Ours was the first Journal in this country to give woven samples of various descriptions of fabrics regularly each month, and since we commenced this feature, some years ago, it has, to some extent, been adopted by others. In matters connected with every branch of designing, we stand ahead of all other Journals.



## MACHINERY, &amp;C.

## Improved Coupled Compound Horizontal Fixed Engine.

Our attention has been drawn to Messrs. Robey and Co.'s improved coupled compound horizontal fixed engine, with patent automatic trip expansion gear. This well known firm of engineers, whose large works are situated at Lincoln, have always occupied a high standard for the first-class character of the various engines that they make. That this is so is shown by the fact that they are continually adding improvement upon improvement, until one would imagine that the limit of perfection in engines had been attained. The engine under notice appears to possess all the requirements necessary for a perfect motor, a special feature being its great strength and solidity, and also its perfect regularity in running with frequently varying loads, which is most important when a large number of machines is driven by one engine. We give an illustration below of this special horizontal engine, a short description of which will be of interest to our readers. It will be seen from the illustration that the metal is disposed so



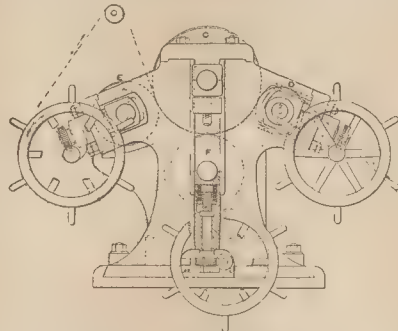
Robey's Improved Coupled Compound Horizontal Fixed Engine.

as to resist the direct line of the strains. The framing is absolutely rigid in all directions, and has a most substantial base under both the main bearing and the cylinder. The bearings are of very large size, made of the best material, and fitted with superior lubricators for continuous running. But we particularly wish to draw attention to the arrangement of the automatic valve gear, which has been produced after a long series of experiments with the principal valve gears hitherto in use, and which forms the special feature of this engine. The steam is admitted by two Cornish equilibrium valves, one at each end of the cylinder. These are lifted alternately by a fixed eccentric, so as to give a constant lead, while the point of release, and, therefore, of cut-off, is decided by the governor. The latter is very delicate in its action, and, being relieved of all working strain, is so constructed as to give a wide range of cut-off, with very slight variation in speed. The admission is full, and the cut-off is sharp and distinct at all points, and, as the valves move almost in equilibrium, the friction and consequent wear and tear are reduced to a minimum. The exhaust consists of a special arrangement of corliss valve, which gives a quick, wide,

opening to the exhaust, with a very small travel. The exhaust valves are placed under the cylinder, which is thus kept constantly drained, whilst all passages are short, so that waste of steam from this cause is avoided. For electric light installations, the valve gear can be controlled by the "Richardson-Neville" Electric Regulator, which enables the engine to be controlled by the electric current itself, thus ensuring either a constant current or constant E.M.F. to be maintained with very varying loads. The valve gear is also arranged so that the engine can be stopped by merely pulling a cord at any part of the mill or factory, a provision which is invaluable in case of accident to life or machinery. The engine is designed to work at from 80 to 100 lbs. pressure, and all the working parts are abundantly strong, and the wearing surfaces large. High pressure single engines are made of this type from 10 to 50 h.p. nominal, and coupled and compound engines from 20 to 100 h.p. The engine will give out the best duty when developing about 2½ times its nominal power, but is strong enough to work up to 4 times the nominal power. Further particulars may be obtained on application to the makers, Messrs. Robey and Co., Globe Works, Lincoln.

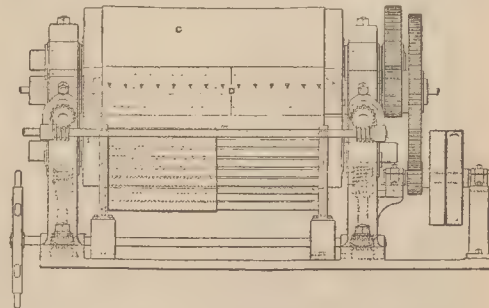
## Machine for Finishing Fabrics.

The finishing of worsted, woollen, and other woven fabrics, by the usual method of cutting with press papers and hot pressing in a hydraulic machine, has been superseded by an invention patented by Mr. John Kirk, of the firm of S. Kirk and Sons, Leeds, and by Mr. Benjamin Lee, of the same place. This consists of a machine or apparatus constructed so as to comprise a series of rollers, through, or between, which the fabric under treatment is passed. The rollers are so arranged that one of them is in a fixed position, while the others surround it, and are so mounted as to be



Machine for Finishing Fabrics. FIG. 1.

capable of being moved towards, or from, the first named roller, means being provided by which pressure may be applied to each of the moveable rollers, either separately or together, in approaching the one first named. It is, however, preferred to apply this pressure separately. One of the moveable rollers has a smooth metallic surface, which may consist of silver, nickel, or some such plated substance. This roller is heated internally by gas jets, steam, hot air, or any other suitable method. Any of the other rollers, or all of them, may have their peripheries of metal, of compressed cotton, &c., and may be heated externally by placing closed steam vessels in close proximity to them, or by other suitable means. All the rollers may



Machine for Finishing Fabrics. FIG. 2.

be driven mechanically, or only a part of them by this means, the remainder being kept in motion by frictional contact only with the fabric under treatment between them. Guide rollers may be used for conducting the fabric through the machine during finishing. By means of machinery, such as we here refer to, fabrics will receive a finish of such excellence and delicacy in a short space of time as is impossible under the ordinary methods employed. A noteworthy feature in this machine, which differs from the usual hydraulic pressing or calendering machines, is that pressure is separately applied to each moveable roller and, also, to the fabric

under treatment between this and the fixed roller, and in such a varying degree as to impart the required finish to the fabric. To be more explicit, say there are three moveable rollers employed, a different, or the same, degree of pressure may be applied to each, as may be desired. This feature will be duly appreciated by those interested in finishing machinery. In addition to the internally heated metallic roller, the other moveable rollers are provided with an external heating apparatus and also with an envelope for retaining the heat around them, in order that the fabric under treatment may not only be subjected to hot pressing between the rollers, but also to a desiccating process, so that it leaves the machine in a thoroughly dry state, thus avoiding the necessity of undergoing a separate drying process in another machine. The saving in time and labour thus insured is of great importance. The following description of the illustrations we give will more readily explain the machine. Fig. 1 shows an end elevation, Fig. 2 a front elevation, and Fig. 3 a cross section of the rollers and the external heating apparatus and outside envelope. The metallic roller, D, is heated by gas by means of a pipe passing through it and having a number of gas burners thereon, or, as stated above, it may be heated by any other suitable method. The rollers of compressed cotton are represented at E and F. The rollers D, E, and F are caused to approach the roller C by means of tiller wheels, worm wheels, screws, nuts, and springs, so that

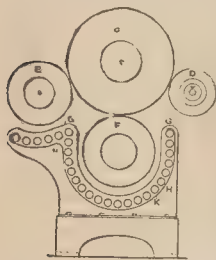


FIG. 3.

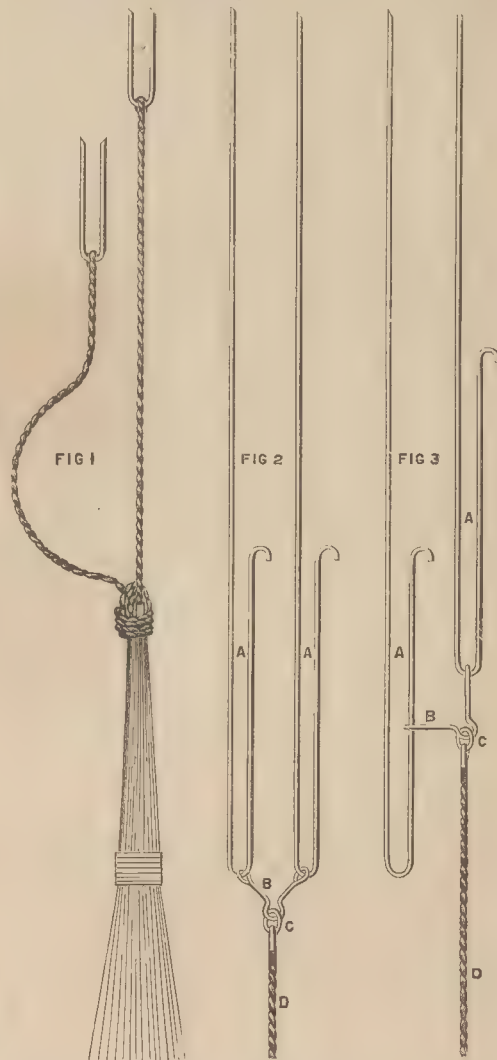
Machine for Finishing Fabrics.

pressure brought to bear upon the material under treatment, as it passes between the moveable rollers D, E, and F, and the roller C, may be of an elastic nature, and also so that the degree of pressure from end to end of each roller may be equal. It will be evident that the pressure of the rollers D, E, and F, upon the material under treatment, and upon the roller C being applied separately, may either be equal or variable. The external heating apparatus, G, for the rollers, comprises a hollow vessel, K, at each end of the rollers. These are connected by a series of pipes, H, and steam, hot water, or hot air, circulates through them, causing heat to radiate from them and to heat the rollers. Or the vessels, K, may be dispensed with, and the pipes, H, be so connected to each other as to form for the heating medium a continuous passage through them. The pipes are enclosed by a metallic envelope, N, as above stated, to prevent radiation from the rollers. The manner of driving the machine will be easily understood by reference to the illustrations, and, therefore, we need not say anything with regard to it here. Messrs. Elkanah Hoyle and Sons, Waterside Works, Halifax, are the sole makers, and considering that this firm have spent the last thirty-five years in the construction of machines of every description used in the various processes in the finishing of fabrics, we have no hesitation whatever in stating that the invention here described possesses more than ordinary merit, the firm having a wide reputation for the making of machines, containing the very latest improvements. We may add that we have had a close acquaintance with them for a number of years, and we can, therefore, speak highly of the machines they make, hundreds of which have been sent to the United States and the Continent, and, latterly, to Australia. Further particulars can be had on application to Messrs. E. Hoyle and Sons, at the address given above.

### Hancock, Rennie, and Hudson's Improved Double-Lift Harness Jacquard.

There have been many attempts made to improve the mechanism of the jacquard, the attention of the maker, in numerous cases, having been directed to that portion called the neck-bands. Users of double-lift jacquards have had reason to grumble at the endless damage caused to pieces during weaving by one or more neck-bands having broken, without being perceived by the weaver. These damages not only entail expense in mending, but also often cause a serious loss to the manufacturer from his having to take a lower price for the goods than he would have done had they been perfect. We presume that a large section of our readers understand the mechanism of the jacquard, but for the benefit of those who are interested in the textile industries, and do not understand its working, a short description of the method of fixing the neck-bands, as now in general use, will not be amiss, for we hold that this machine will shortly be adopted by those who now only know it by name. A glance at Fig. 1 will show the old style as generally used. In this there are two neck-bands. This system has had many drawbacks, the chief of which has been that, with two, one had to be slack, whilst the other was tight; then the motion caused the bands to chafe, and the consequence was that, owing to the friction and, in many cases, to a jerking of the bands, continual breakdowns occurred. Unless these breakdowns were at once noticed, they resulted in a portion of the cloth being woven with one or more neck-bands down, and a greater or lesser amount of damage was done. The improvement under notice obviates these defects. Figs. 2 and 3 give an elevation of vertical wires. A A are two upright wires, B is a double loop, made of wire, and this occupies the place, and helps to do the work, of the two neck-bands, as in Fig. 1. C is a link attached to the double loop B, and to this is secured a single neck-band D. Fig. 2 shows the mechanism as stationary, and Fig. 3 as having made a movement which corresponds to that of Fig. 1, in which there are the two neck-bands. In the connecting of the wires A, B, and C, they are arranged so that there is no chafing effect on any part of the mechanism or harness, their various movements being accomplished by an easy sliding motion, and such as causes little friction. There

is, comparatively, neither jerking nor vibration of the machine, the whole working in a combined and easy manner. The connection between the single neck-band and the harness enables a smaller knot to be made at the heads than where two neck-bands are used—this, of course, leaves more room in the harness for the heads to pass each other. In the system of one neck-band, if a band should come down, the weaver cannot weave, and his attention is immediately drawn to the fact. When a break-



Hancock, Rennie, and Hudson's Improved Double Lift Harness Jacquard, down does occur, the connection between the wires and the harness is speedily made, and it will be obvious that this can be done quicker than where two bands are used. We have had an opportunity of seeing a number of jacquards at work on this principle, and they were in every respect satisfactory. Jacquards on the old principle can be easily altered to this style at slight expense. Full particulars of prices, &c., can be had by addressing Messrs. Hancock, Rennie, and Hudson, Springfield Mills, Morley, Leeds, or Mr. James McMurdo, jacquard machinist, New Street, Miles Platting, Manchester.

### Speed Regulator.

We should, now-a-days, be guilty of pedantic utterance were we to suggest to power users the necessity of having properly and well controlled engines. Guilty as we should be in so doing, yet we should be surpassed by the one who, knowing this, would still run his motive power without any



attempt to pick up the producing power which he daily throws away by physical formation of his governing power. Many and various are the attempts and appliances which are suggested by their makers and patentees to compensate for such loss of production and lack of continuously correct running under varying loads and steam pressures. Mechanical working appliances for this result have decidedly objectionable features, in so far as locknuts, screws, ratchets, &c., by friction, in time, require renewals, thus, although they may be beneficial to any turning, yet, they cannot give throughout their application one uniformity, nor correct amount of regulation to the governor.

The appliance before us is absolutely perfect as a compensating power to any governor, perfect in economy, inherently, as no working parts are required; applicable to any existing governor, and, once fixed, becomes part and parcel of the governor itself in instantaneous, constant, and complete, action. The results claimed from applications of the Improved Mercurial Speed Regulator are—the greatest amount of production, utmost possible accuracy of turning, and engines continually controlled. Simplicity in detail, and ease of application are leading features; also, as cost of I. M. S. R. is little, this appliance becomes a necessary adjunct to all present and future motive engines. Although much study and expense have been given to, what may be rightly termed, the science of governing engines, yet, by practical experience, there has been a point in the perfecting of control by governor beyond which, up to the present time, advance has met with a deadlock. It is at once granted that great improvements upon the old type of governors have been made, and that in various ways, such as the sensitive-stable, sensitive-light, and high-speed Porter governors. The mean governing powers of these classes have, in some instances, been very successful, but in each instance, to be perfect in command of engine, by being sufficiently, and not over sensitive-stable, as well as correct in supply, at variations of positions, or decrease or increase of motive power, it is absolutely necessary that some compensating arrangement be applied. As in other applications of mechanical motion, theory and practice are irreconcilable elements, owing to natural barriers which assert themselves, so it is accepted that if governors were made sufficiently sensitive and correct in position, for supply or decrease of motive power, allowing the paradox, the governor would become too unstable and unsteady for the purpose for which it is made. The opposition of one natural law has been perfectly overcome by application of another natural law. The invention under notice calls into play natural gravitation, i.e., addition or subtraction of any fluid of sufficient specific gravity for practical use, during the rise or fall of governor. The benefits of this regulator of Compensating Power are two-fold:—1st, it is possible to make any governor practically perfect in its control over the engine; 2nd, by arrangement of tubes which contain the dead weight, inertia or stability can be developed, or, on the other hand, sensitiveness of governor can be increased. It will be at once seen that the Regulator is connected by means of the ordinary working shaft and rod to the sleeve, thus acting in conjunction with the rise and fall of the governor. The requirements of governors may be more or less; these are met by weight per inch of fluid mercury in depth. The supply or decrease of regulating power is, therefore, constant and regular, and as there are no working parts, forms at once the best possible method of constantly correcting the control of the engines. The maker of this Regulator has personally fitted considerably over 120 governors, and, owing to the many and various classes of governors on which he has operated, he is confident that the highest results of production, with economy, can be obtained from the application of his Mercurial Speed Regulator, and as the price is very low, every user of power who requires steady and regular turning will start the year well if he at once place himself in communication with the inventor, for the purpose of obtaining the most successful governor appliance of modern times, at Burtinshaw's Mercurial Regulator Manufactory, Bradley Street, Lever Street, Manchester.

### Machine for Manufacturing Knitted Pile Fabrics.

A distinct advance in the mechanism of knitting machines has recently been made by Mr. James Booth, manufacturer, Lee Mills, Halifax. It consists in improvements by which, during the operation of knitting, certain appliances are employed for receiving and holding the loops in position whilst being cut and severed, by which means pile fabrics, such as plush, seals, and such like cloths, can be produced on machines that, hitherto, have only been available for knitted looped fabrics. The invention relates to the class of knitting machines known as straight-bar, and, in combination with the needles, and sinkers, and guides, on a longitudinal bar opposite the sinkers, a series of cranked hooks, or stems, are employed, composed of either duplicate parts, the points of which are connected, whilst the opposite ends of the shanks are spaced and secured in a bar of lead or spelter, or of two such cranked hooks or stems, spaced a distance apart. Within the space between the duplicate parts of each cranked hook, or of each two hooks, is a portion of a circular cutter or knife, mounted on a longitudinal shaft, and free to move laterally thereon, whilst being caused to rotate by a key slot formed on the cutter, and a key on the driving shaft. As the pile loops are formed, they are, by the guide, passed over the point of one of the cranked hooks, or each loop is passed over two of the separate spaced hooks, when the latter are employed, and which are so shaped and arranged in relation to the protruding part or arc of the circular cutter that not until a series of, or several, loops are deposited on the cranked hook or hooks will the first loop of the series be cut and severed, the accumulation of several loops beyond the range of action of the circular knife being designed to ensure the effectual tying in, and securing the pile loops before severance, and, as the leading loops of the series are being severed by the circular cutter, a proportionate number of new loops is being added to, or placed upon, the cranked hook or hooks.

Mr. Arthur Dickson, manufacturer, of the firm of Arthur Dickson and Co., Wheatlands, Galashiels, died on Wednesday morning, January 15th. His business connection with the town extended over forty years, during which time he greatly extended his mills.

### Galloways, Limited, Manchester.

#### THE GALLOWAY BOILER.

This well known firm of engineers and boiler makers have just brought before our notice one of the neatest and most interesting little books for steam users that we have seen. Of course, its prime object is that of an advertisement, and the firm being adepts in the art of successful advertising have spared neither trouble nor expense in accomplishing their object. The book is neatly bound in dark green cloth, and is of a handy size either for the shelf or the pocket. It deals with the whole subject of boiler making by machinery, taking all details in their proper order, and giving numerous illustrations of the machines employed. The first point touched upon is the testing of the plates used in the making of boilers, and here reference is made to Kirkaldy's improved testing machine. Next come the plate-edge-planing machine and the plate-corner-thinning machine. The plate-bending rolls and the self-acting shell drilling machine are then described, as are also the riveting machines and the steam hammers. Continuing, much information is given about the machines for flanging, for furnace drilling, and for furnace riveting. It will thus be seen that, in all furnace or plain flue work, not a single operation is performed by hand labour—all is done entirely by machinery. The construction of the patent Galloway flue is next described, and much information given regarding the various machines used. These include the flue riveting machine, the horizontal lathe, the hydraulic press for cutting tube holes in flue plates, the angle iron bending machine, the rivet making machine, and the tube flanging machine. Up to this point, a full description of boiler making by machinery is given. Following this is a mass of useful information upon the variety of boilers produced by the firm. Commencing with an illustration of a boiler as formerly made, this is contrasted with one on the latest principle. Then follow boilers arranged for burning wood—one with locomotive fire-box—a compound boiler, a Lancashire, or two-flued, and a Cornish, or single-flued, boiler. Next, the multitubular boiler is described, and also the compound Lancashire and multitubular, and the compound Cornish and multitubular boilers, &c., &c. The information given upon these is well worth reading. Galloways, Limited, are makers of single cylinder and compound engines, and short paragraphs, with illustrations, are given of their superposed compound engine, twin compound engine, and compound engine for driving dynamos. Our readers should obtain a copy of this book, which is entitled "The Galloway Boiler." In addition, the firm have issued a handsome show card, giving illustrations of the varieties of boilers made by them. The following short article on "Boiler Making by Machinery," extracted from this little work, will interest our readers:—The generation of steam under pressure is, and must remain, one of the most important factors in the successful employment of steam power, for not only is the value of an engine regulated very considerably by the pressure and dryness at which the steam can be safely and conveniently supplied to it, but there is much greater scope for the exercise of economy in the boiler than in the engine, while the still more important point of absolute safety must not be lost sight of for a moment. It is, therefore, somewhat surprising that the steam boiler has been comparatively neglected in comparison with the attention bestowed upon the steam engine; this, however, appears to be due to the fact of the latter having greater attractions for the engineer, the improvements in the boiler being simply required to keep pace with the advance in the engine. The undoubted power of confined steam appears to have been present to the minds of men at a very early period, but we see the first practical result in the invention of the Marquis of Worcester, who, in 1668, raised water by steam produced in a globular cast-iron vessel set in brick-work. This was improved by Savery and Newcomen, the former shortly afterwards constructing a plain vertical cylindrical boiler, fired externally; the Haycock boiler quickly followed, and internal flues were inserted in 1769. Up to this period, and indeed for some time longer, the duty was obtained by the vacuum created in the engine cylinder consequent on the admission of cold water into the cylinder or condenser, which had been previously filled with steam, the boiler itself being simply required to supply vapour at atmospheric pressure: five pounds to the square inch was, in those days, considered to approach the limit of safety, and boilers were provided with atmospheric or vacuum valves opening inwards to prevent collapse, if sudden cooling from the exterior, or rapid withdrawal of steam, should lower the pressure to too great an extent. Great surprise need not, therefore, be felt at the introduction by Brindley (1800) of a boiler having a strong granite shell, with internal flue of copper traversing the length three times, the gases then passing to the chimney; and Watt himself, at the same time, constructed a boiler with a strongly hooped wooden shell, and internal copper tube. At the end of the last and the beginning of the present century, however, wrought-iron was introduced for the construction of boilers, its manifest advantages in every direction soon leading to its universal adoption, and the introduction of the superior material quickly led to important improvements in form, strength, and efficiency. The Waggon boiler of Watt (1788), much improved and fitted with an internal flue, was followed in 1800 by the Egg-end boiler, and in 1804 by the Cornish boiler, having one cylindrical flue for internal firing, also flat ends; in 1810, return side and bottom flues constructed in brick-work, precisely as used at the present time, were introduced. In 1811, an additional flue was inserted, making the two-flued or Lancashire boiler

of to-day, and all future improvements have been in the details of construction and mode of setting. Hundreds of patents have been taken out at various times for almost every conceivable variation in the design of steam boilers, some of which are still used, owing mainly to various local causes. The Elephant boiler may be mentioned, consisting of one upper egg-end boiler, connected to two smaller ones below by vertical pipes—and the multitubular boiler with internal or external furnace, the flame afterwards passing through horizontal tubes of small diameter; to say nothing of an unlimited number of more or less complicated designs which possess but few merits to recommend them for general use. Since 1870, or thereabouts, there has been a gradually increasing tendency towards the adoption of steel in boiler construction, and the greater strength of this material has enabled higher pressures to be carried; but, at the same time, it has necessitated more attention than formerly to constructive details, and has led to the general adoption of machinery to insure the various pieces or plates being put together with almost mathematical accuracy. Notwithstanding all the ingenuity that has been exerted towards the discovery of new types, the Lancashire boiler has almost entirely superseded every other description, and the only variation from its primitive form which has been a pronounced success is that now so well known as the Galloway boiler. The inherent principle of this is that the two furnaces immediately beyond the fire-bridge join into one flue of large size, containing an arrangement of vertical cone tubes. Many experiments were made and patents taken out before the boiler was brought to its present state of perfection, the aim in all such schemes being the best arrangement of the vertical cone tubes, which have for their object the more rapid circulation of water in the boiler, so as to equalize the temperature throughout; this conduces to the longevity of a boiler, and, by quickly bringing the heated water to the surface, allows the steam to rapidly free itself from the water. It has been found that the conical form possesses the great practical advantage of enabling any tube to be expeditiously removed, as the diameter of the small flange is less than the hole required for the large end, and thus for removal the tube is simply withdrawn through the large hole, a proceeding quite impossible with other forms. The first patent for this boiler was taken out in 1848, the two furnaces narrowing to a circular throat and then expanding into a flue with flat top, there being only one row of parallel tubes down the centre; in 1851, two additional rows of tubes were introduced, one down each side, and they were now made of the present cone form; in 1880, the flue assumed the oval form, with the "two and one" rows of tubes, and as a considerable portion of the heat was found to pass away unrestricted along the sides of the flue, in 1881, the side pockets were inserted to prevent this. This form of boiler continued to be made until recently, when the present construction was introduced, which has been further improved by the introduction of the patent expansion pockets at the back end of the flue. Contented with the general superiority of the plain-flued and Galloway boiler, the efforts of boiler makers have recently been principally directed to improvements in details of construction, and, with this view, the larger firms have adopted—to a greater or lesser extent—machinery for every operation wherever it has been possible to apply it. Punching was done by machinery at a very early date, then the more difficult operation of riveting was successfully achieved, and so the advance continued, until, at the present time, in the leading boiler-making establishments, there are few processes where machinery is not employed; and at the branch works which Galloways, Limited, have recently erected at Ardwick, situated between the London and North Western, and the Manchester, Sheffield, and Lincolnshire Railways, with which they are connected by sidings, they have studied and endeavoured to perfect, as far as possible, the employment of machinery for every process to which, in their opinion, it is applicable.

### Hutchinson, Hollingworth, and Co., Dobcross.

The prospects for the coming year in the iron and woollen trades appear very encouraging. We have had, recently, brought before our notice extensive additions to be made by various firms to meet the demands upon them for the forthcoming seasons. Amongst the number, we are pleased to learn are Messrs. Hutchinson, Hollingworth, and Co., Limited, the celebrated firm of loom makers, of Dobcross Loom Works, Yorkshire. During the past year, this firm have been kept fully employed on the building of the Hollingworth and Knowles' loom, upwards of 1,700 of these looms having been erected and started by them during the past twelve months. We understand that they have almost completed the additions to their foundry which, when finished, will cover a ground area of over 2,000 square yards. We also learn that preparations are being made for the further extension of their works in the form of a new erecting and machine shop, and suite of offices. This building, which will be fire-proof, will be two storeys in height, the leading dimensions of which are 200 feet long and 110 feet wide, with a total floor space of over 5,000 square yards. The Railway Company are at present engaged in constructing for them a branch line, so that when the new portion of the works is completed, the railway waggons can be brought direct to almost all parts of the works for the loading and unloading of goods as they are required. Messrs. H., H., and Co. fully expect to have this new place completed before the autumn of this year, which will mean to them the employment of an additional 250 workmen.

A recent addition has been made to the Manchester Technical School in the shape of a woollen and worsted loom built by this well-known firm of loom makers, and presented to that institute for the use of the students. This loom, which is 40 in. reed space, is built on the Hollingworth and Knowles' principle. It is supplied with a 16s shaft open shed Jacquard, four boxes at each side, capable of working with seven shuttles. It is fitted with a positive take-up motion and conditional let-off, all the teeth of which are machine cut from the solid. The loom is also arranged with a patented change pinion driving arrangement, by which means, the speed of the loom can be increased or decreased one-third in a very short space of time. Since the introduction of this loom in 1884, over 6,740 have been made by this firm, and supplied to all the leading manufacturers in Great Britain and on the Continent.

### Commercial Failures.

According to *Kemp's Mercantile Gazette*, the number of failures in England and Wales gazetted during the four weeks ending Saturday, January 25th, was 316. The number in the corresponding four weeks of last year was 352, showing a decrease of 36. In addition to these gazetted failures, there were 236 Deeds of Arrangement filed at the Bills of Sale Office during the same four weeks. The number filed in the corresponding four weeks of last year was 266, showing a decrease of 30. The number of Bills of Sale published in England and Wales for the four weeks ending Saturday, January 25th, was 610. The number in the corresponding four weeks of last year was 723, showing a decrease of 113. The number published in Ireland for the same four weeks was 29. The number in the corresponding four weeks of last year was 50, showing a decrease of 1.

### Personal and Trade Notes.

Mr. Wm. Hollins, of Pleasley Vale, Mansfield, died on Tuesday, last week. He was the head of the firm of Wm. Hollins and Co., spinners.

The first annual meeting of the shareholders of Lister and Co., Limited, Manningham Mills, Bradford, was held recently, when a dividend of 10 per cent. was declared.

A company has been formed under the name of Richard Thompson and Co., Limited, to run Stockbridge Shed, Padiham. The capital of the company is £2,100, in £100 shares.

We hear that a company is in process of formation for the purchase of the Chapel Street Mills, Staleybridge, for ring spinning. The mills have been standing empty nearly twenty years.

A company, under the title of Hodgkinson, Maudsley and Co., Limited, has been registered with a capital of £1,500, in £10 shares, to acquire the business carried on at the Hope Mills, Clitheroe.

Mr. John Wilson, Highfield Mills, Gildersome, has taken a number of looms at Mr. Mitchell's Mill, Morley, near Leeds. Mr. Wilson evidently is feeling the effects of the improvement in trade.

Mr. Charles Smith, Causeyside, Paisley, is about to build a carpet factory at Stonefield. The length will be 170 feet, and the breadth 117 feet. If we remember rightly, Mr. Smith is himself a designer of no uncommon order.

German manufacturers are making under-shirts, pants, stockings, &c., with various designs. What the good of them may be we cannot imagine, unless they are to be worn as top garments, when, perhaps, the patterns may be admired.

Manufacturers of underclothing on the Continent have brought out a few things called novelties. The dress shirts introduced in Paris some time ago do not appear to have reached here yet. These had fronts of red, blue, or other colours, to suit the wearer.

The Cravenette Company, Limited, has been registered with a capital of £30,000, in £10 shares, to acquire the business of waterproofing dress, mantle, and other fabrics. It is carried on at the Cravenette Works, Moss Street, Bradford.

A number of Gera and Greiz manufacturers have combined for the purpose of building a large worsted spinning mill, with the intention of keeping in Germany a part of the many millions of marks paid annually for foreign worsted yarns.

At the meeting of shareholders of John Crossley and Sons, Halifax, a dividend of 9s. per share was declared. Mr. Louis John Crossley resigned his position as a director of the company on account of failing health, and Mr. Henry Crossley also resigned.

Messrs. M Sheard and Sons, Batley, have ordered a number of looms from America which, it is said, will bring out a new branch in the manufacturing of cloth. We should like to know for what cloths English loom makers are not competent to cater?

Mr. Joseph Hawley, Colne, has purchased, from the executors of the late Mr. James Osmund, the Windust Weaving Shed, which was being erected prior to this gentleman's death. Mr. Hawley intends to finish the building and fit it up with machinery as early as possible.

The firm of Messrs. Wm. Thompson and Sons, Huddersfield, has been carried on as a co-operative industrial partnership business for the last three years. Having found that no dividend could be paid, the workpeople resolved unanimously to supply it out of their own accumulated dividends.

The Victoria Mills at Bolton are to be fitted up with spinning machinery by Messrs. Platt Bros., Oldham. The amount of the contract is about £60,000, and two new engines are to be put in by Messrs. Hicks, Hargreaves, and Co., Bolton. As this mill is being furnished specially for making hosiery, the Leicester manufacturers will note it.





## PATENTS.

## Applications for Letters Patent.

Belting (leather link). J. K. Tullis, Glasgow.	14th Jan.	643
Coloured silk fibre, mixed or yarn. R. J. Maclean, Halifax.	27th Dec.	20,771
Connecting arm for actuating picking sticks. E. Hollingworth, Huddersfield.	30th Dec.	20,866
Colours (azo). R. J. Friswell and A. G. Green, London.	3rd Jan.	134
Cotton gins. H. H. Lake, London.	7th Jan.	293
Carding engines. J. Siddall and M. Chadderton, Manchester.	8th Jan.	324
Cloth (Witney) and method and apparatus. A. and R. Brearley, London.	11th Jan.	541
Carding engines with revolving flats. J. Honegger, London.	13th Jan.	592
Carding engines. T. Rawthorne, London.	14th Jan.	677
Carding engine doffing combs. S. Tweedale, Halifax.	17th Jan.	928
Carding engines (revolving flat and roller and clearer). J. A. Hart and C. Baynes, London.	17th Jan.	953
Cotton and cotton waste opener and purifier. E. Edwards, London.	20th Jan.	1,010
Corded stitch embroidery to machine lace. T. J. Woollatte, Nottingham.	21st Jan.	1,056
Carding engines (revolving flat). T. S. Whitworth, Manchester.	24th Jan.	1,260
Carding engine flats and means for attaching clothing. C. Hassell and E. Holt, London.	25th Jan.	1,317
Dyeing and scouring machines. J. P. Delahunty, London.	24th Dec.	20,715
Dye stuffs (raw materials for). R. J. Friswell, London.	1st Jan.	39
Dyeing and waterproofing. E. Cavallot, London.	3rd Jan.	142
Drying or carbonizing fabrics. J. Walker and W. Brown, Dewsbury.	6th Jan.	200
Drying hanks of yarn. J. B. Whiteley, E. Whiteley, and J. B. McKay, Huddersfield.	9th Jan.	375
Doffing combs of carding engines. S. Tweedale, Halifax.	9th Jan.	390
Drilling and punching circles of circular machine combs. W. Fortune and F. H. Bentham, Bradford.	16th Jan.	818
Drying textile materials. W. Albert, London.	16th Jan.	825
Drying hanks of yarn whilst in motion. E. Feather and H. Greenwood, Halifax.	15th Jan.	743
Drying and bleaching. G. Young and F. Pearn, London.	22nd Jan.	1,157
Fabric for lining stockinette, velvet, &c. H. Huth, Halifax.	27th Dec.	20,772
Fire-proofing fabrics and manufacture. W. S. Somers, Liverpool.	23rd Dec.	20,625
Forming and packing warps and portions of warps. J. H. Stott, Manchester.	8th Jan.	333
Figured cloth. G. Mort, Bradford.	15th Jan.	741
Flexible shuttle-guard. W. Bradbury and J. C. Tongue, Ashton-under-Lyne.	17th Jan.	930
Fringing machines. W. Fairweather, Manchester.	22nd Jan.	1,135
Fleece-dividing machinery. E. Edwards, London.	25th Jan.	1,364
Hosiery (self-fitting). Rothwell Hosiery Co. and W. Rothwell, Bolton.	30th Dec.	20,879
Harness and healds. J. Yeadon, Bradford.	10th Jan.	451
Ingrain or pro-Brussels carpets. A. Fisher, London.	10th Jan.	446
Jacquard harness. W. and H. A. Fielding, Manchester.	25th Jan.	1,338
Logwood extract for dyeing. J. E. Bedford, Leeds.	31st Dec.	20,924
Lubricating top and bottom rollers of spinning, &c., frames. J. A. McDowell-Guajardo, Manchester.	31st Dec.	20,926
Lace-making machines. A. M. Clark, London.	6th Jan.	305
Looms. H. H. Lake, London.	14th Jan.	697
Mules (spinning). J. Cheetham, London.	30th Dec.	20,884
Mosaic floor cloths, &c. (apparatus for). F. Walton, London.	30th Dec.	20,893
Mounting yarn on pattern cards. W. H. Ibbetson, Bradford.	31st Dec.	20,951

Mules (self-acting). W. Bryden and H. Stansfield, London.	8th Jan.	346
Mules (self-acting). J. Clegg and J. Moorhouse, Manchester.	23rd Jan.	1,191
Operating the pile-cutting knife of looms for double pile fabrics. H. Lister, Huddersfield.	8th Jan.	329
Pin, peg, or stud for pirns, &c. G. and J. Burns, Bradford.	1st Jan.	14
Piece board for fabrics. C. H. Dyson, Bradford.	4th Jan.	146
Pirn or spool winding machines. J. B. and E. Whiteley, Huddersfield.	6th Jan.	207
Pickers or shuttle checks. R. Mayall, Royton.	6th Jan.	209
Prevention of smoke. W. D. Grimshaw, Halifax.	8th Jan.	319
Reels for yarn. T. Coleby, T. Guest and T. Brooks, Manchester.	23rd Dec.	20,593
Reed motions, (loose). J. Butterworth, Halifax.	24th Dec.	20,689
Regulating drag on bobbins. H. Tetlow, Manchester.	16th Jan.	822
Removing cops doffed from spindles. H. B. Barlow, Manchester.	16th Jan.	823
Reversible ingrain or pro-Brussels carpet. S. Wood and G. H. Heppleston, Halifax.	16th Jan.	819
Shuttle guards (automatic). R. Smyth and J. Middleton, Tullyelmer.	23rd Dec.	20,594
Shuttle tongues. E. and C. Stephenson, Houghton.	23rd Dec.	20,603
Shuttles. A. Smeek, London.	23rd Dec.	20,634
Shuttles. J. S. Smith and J. S. Sutcliffe, Manchester.	23rd Dec.	20,817
Shaking machines for cotton waste, &c. W. Hargreaves, Manchester.	31st Dec.	20,930
Straightening piece fabrics after bleaching, &c. J. and G. F. Butterworth, London.	3rd Jan.	111
Shuttles. C. H. Lord, London.	6th Jan.	204
Shedding and take-up mechanism (loom). R. L. Hattersley and J. Hill, Keighley.	10th Jan.	437
Spinning machinery. G. Ormondroyd, Bradford.	9th Jan.	366
Spindle (mounting). F. Garniss, Manchester.	13th Jan.	574
Shuttles (sending) across loom. R. Eccles, Halifax.	14th Jan.	624
Swifts for reeling, &c. W. A. and W. Healey and J. S. Milne, London.	15th Jan.	753
Swifts folding for reeling, &c. W. A. and W. Healey, and J. S. Milne, London.	15th Jan.	754
Shuttle boxes (rotating). J. Hartley and J. B. Wilson, London.	14th Jan.	631
Stopping mechanism for weft-pile cutting machines. O. Drey, Manchester.	20th Jan.	963
Spinning frames. J. V. Eves, Manchester.	21st Jan.	1,030
Spinning fibres. J. V. Eves, Manchester.	22nd Jan.	1,225
Shuttle boxes (apparatus connected with). M. Wright and F. Nettleton, Halifax.	24th Jan.	1,254
Tentering and hot air drying machines. J. and J. S. Butterworth, London.	7th Jan.	262
Treating and dyeing cotton slivers, &c. R. Haddan, London.	14th Jan.	703
Vats for dyeing. E. Charles, London.	17th Jan.	903
Vests, combinations, shirts. W. Hayter and E. Terry, London.	22nd Jan.	1,118
Ventilating apparatus. W. T. Sugg, London.	25th Jan.	1,346
Waterproofing and fireproofing fabrics. C. Baswitz, London.	23rd Dec.	20,665
Weights for shuttles (tension regulating). S. W. Gillett, Manchester.	24th Dec.	20,693
Water (heating and cleaning) in spinning frame troughs. J. and J. F. Smyth, Belfast.	30th Dec.	20,877
Wool from grease (freeing). L. Pinagel, London.	31st Dec.	20,936
Winding, consolidating and levelling yarns on flanged beams. A. Hitchon, Accrington.	8th Jan.	335
Wet spinning frames for flax, &c. York Street Flax Spinning Co. Limited, and H. McKibbin, Belfast.	9th Jan.	371
Waterproofing composition. A. N. Ford, Dartford.	17th Jan.	893
Winding yarns. G. H. Holden and J. Ashworth, Manchester.	17th Jan.	922

## Patents Sealed.

16,572	16,842	17,429	17,618	18,015	18,263	18,315	18,409
18,547	2,743	7,103	7,326	11,608	13,514	13,904	14,602
14,638	14,673	14,756	18,010	18,327	18,460	18,668	18,901
197	10,432	14,859	15,731	17,333	17,811	18,568	97
148	350	933	1,651	2,941	15,360	15,381	
16,051	16,300	16,338	18,412	18,633	376	1,207	4,534
4,735	13,881	14,681	15,393	15,558	15,811	15,881	8,934
18,890	250	602	605	655	817	1,124	1,482
11,988	13,524	14,925	16,159	16,419			

# The Journal of Fabrics

AND

## Textile Industries.

Vol. 17. No. 103. MARCH 12, 1890. Price 10d.

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### New Patented Fabrics.

#### IMPROVEMENTS IN THE MANUFACTURE OF TAPESTRY.

##### BRUSSELS, PLUSH OR PILE, AND SIMILAR FABRICS.

This invention relates to the manufacture of tapestry, Brussels, plush, or pile, and similar fabrics, for carpets, curtains, and the like, and it has for its object the production, in a weaving loom, of the same pattern and colouring on both sides, or surfaces, of the fabric, and, by which, in the case of pile carpets and rugs, in particular, an imitation of hand made Axminster fabrics is obtained, firmness equal to that secured by hand knotting being given to the individual piles of cloth. In the manufacture of such carpets and rugs in looms as previously attempted, the pattern of the back of the fabric has been marred, and the colouring mixed, owing to the binding warps employed to secure the pile and to form the cloth being carried over the weft, and floating coloured or pattern warps, and pressing the latter through between the warps forming the pattern at the back. According to this invention, however, this defect is overcome by forming practically two plies of cloth in the fabric, the binding or twilling warps, which may be introduced to bind the pattern warps in either or both plies, being, in no case, carried from one ply to the other, or allowed to pass through the floating coloured warp. In carrying out the invention, an ordinary Brussels carpet or similar loom is employed, and the coloured warps, by which the pattern is formed, are carried from the fell to a bank, or banks, of bobbins at the rear of the loom through mails which are operated on by means of a jacquard mechanism, whilst the binding warp is carried, in like manner, to a beam, or beams, and passes through heddles, or other shedding mechanism, operated in the usual way, to form one or two plies of cloth when the shuttle is thrown. The jacquard mechanism is operated to raise, to the upper surface, such of the coloured warps as are to form the pattern, then to depress the same warps to produce the same pattern on the underside, the unselected warps being floated between the plies of

the fabric. The pattern warps are thus raised and depressed at each throw of the shuttle, whilst the binding warps are similarly, but independently, acted on by the heddles to form cloth with the weft, either in the back ply alone to bind the pattern warp, in the case of cut pile fabrics, or both in the front and the back ply. In forming cut pile fabrics, each selected warp, after appearing at the upper surface, is carried down to the back of the under ply under the shuttle thread, then up to the front over the next shuttle thread, then down again for the next shot, and then up to the front—the pile cutting blade or knife being inserted at each alternate raising of the pattern warp, and the pile thread being thus secured by two weft shots over it, but under the floating warps, and one intermediate weft shot under it but over the floating warps, as well as by the binding warps, when such are used in either the back or front ply. In weaving Brussels carpets, the usual pile forming wires are used instead of the cutting blades or knives. The wire or knife may be used for one of the sides only, in which case a raised or plush pattern would appear on one surface, while the other would contain an equally distinct and similar pattern of plain Tapestry; or, as in fabrics where a raised or plush surface is required on both sides, the wire or knife may be thrown over the coloured warps, which are depressed to form the pattern on the under side of the fabric, as well as under the coloured warps when raised to form the pattern on the upper side of the fabric.

#### AN IMPROVED CONSTRUCTION OF CARPETS, RUGS,

##### OR MATS, FOR GIVING ALARM SIGNALS WHEN

##### TRODDEN UPON, OR IN CASE OF FIRE.

This invention relates to a construction of carpets, rugs, or mats, whereby these are made to give an alarm signal when persons tread on, or move, them without a knowledge of their construction, the object being to protect rooms, or objects, in, or against, which such carpets, rugs, or mats, are placed, against burglars or unauthorised intruders. This means of security has the advantage that the burglar, or other unauthorised person entering the room, has no knowledge of the fact that he has given the signal, and that such signal is given some time before he begins operations, and, furthermore, that even though he may be aware of the construction of the alarm-carpet, he cannot prevent it from acting by lifting or pushing it away. The invention is also, to a certain extent, applicable for indicating the presence of fire in the locality in which the carpet is situated. For the above purposes, the entire surface of the room to be protected, or that part which surrounds an object to be protected, is covered with the alarm-carpet, rug, or mat, so that, in order to enter this room, or to approach this object, the burglar, or other person, must either tread on the carpet, &c. or must remove it, in either of which cases the alarm will be given. The alarm signal can be given by electrical, pneumatic, or mechanical means, but the most simple and practical arrangement is the electrical, as the pneumatic appliances are too liable to get out of order, and are, therefore, unreliable, and, in addition, they are comparatively expensive; the same objections also apply to mechanical appliances. The electrical devices are arranged in such a manner that, on treading upon any part of the carpet, an electrical contact is made, so as to close an electrical circuit, which includes alarm-signalling apparatus. Thus there may be contained, at various points of the carpet, two contact points that are kept separate by a caoutchouc ring which, on being trodden upon, is compressed so as to allow the contacts to meet. These contacts are arranged at such distances apart that any footstep on the carpet must touch the one or the other of these. Such contacts may also consist of two sets of strips of conducting material, crossing each other, and held apart by compressible non-conducting material. In carrying out the invention, the following construction may be advantageously adopted. The carpet may consist of two parts—an under-fabric containing the alarm appliance, and an ordinary carpet covering the same. The under-fabric has fixed upon it a number of upwardly curved metal springs of sufficient strength not to be pressed down by the weight of the upper carpet. These springs are suitably connected at one or both ends to the one conductor of an electrical circuit, and beneath the curved part of the spring are one or more contact studs, connected to the other conductor of the circuit, so that, on the spring being depressed by the foot, it closes the contact, and the electrical signal is given. In order to effect the closing of the circuit when the carpet is lifted, a second spring contact is provided, having an arm which passes under the first named spring, or it may pass itself under the latter, but which projects with its free end above the curved part of such spring, and which is of such strength as to be pressed down by the weight of the upper carpet, so as to keep the springs out of contact.

#### IMPROVEMENTS IN THE MANUFACTURE OF

##### FIGURED FABRICS.

This improved cloth is chiefly applicable for toilet quilts, toilet covers, antimacassars, mats, and other similar articles, and, in the weaving of it, a loom of the ordinary construction is employed, and two yarn beams are used. The yarn from one beam, termed stitching yarn, is controlled by means of a Jacquard machine for the purpose of creating the figure, and, for making the ground, it may be controlled, either by the Jacquard machine, or by cumber boards, preferably, by the latter. The yarn from the other beam, termed face yarn, is drawn



into, and controlled by, heads. By preference, twice as many stitching ends as face ends are used, but either the same number of each, or more or less stitching yarn in proportion to the face yarn, may be employed. Two shuttles, one carrying a fine weft, and the other carrying a coarse weft, are needed. The progressive motions of the warps and wefts are as follow:—1st Pick.—The face yarn is to be formed tabby, that is one end up, and one end down, and, at the same time, the stitching yarn is raised by the Jacquard machine to create the figure; this is a pick of coarse weft. 2nd Pick.—This pick is put into the same shed as the first pick, and is also a pick of coarse weft. 3rd Pick.—To make the shed for the third pick, the face yarn remains as in picks 1 and 2, and the stitching yarn only is changed to tabby; this is a pick of fine weft. 4th Pick.—Both the stitching yarn and the face yarn are changed to the reverse tabby of the previous pick. This also is a pick of fine weft, and completes the round. These operations being continued in the order named will produce the improved cloth. It will be seen that the stitching yarn works thus:—The first pick of weft, figure; the second pick, figure; the third pick, tabby; the fourth pick, reverse tabby. The face yarn works thus:—The first pick, tabby; the second and third picks, the same tabby as the first; and the fourth pick, the reverse tabby to the other three. Figure 1, of the accompanying Sheet of Diagrams, shows, in longitudinal section, the structure of the improved fabric made with four picks to the round, as above described. In this Figure, and in each of the remaining views on this Sheet, which illustrate modifications of the improved fabric, the back warp is represented by the strong lines *b*



Fig. 1.



Fig. 2.

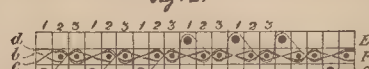


Fig. 3.



Fig. 4.

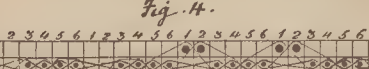


Fig. 5.

and *c*, the face warp by the fine lines *a* and *d*; while the fine weft from one shuttle is marked by the small black circles, and the coarse weft from the other shuttle by the larger circles. The line of spaces marked *E* on all the Diagrams indicates the picks which go to form the face of the figure, the line of spaces marked *F* shows the picks which go to form the face of the ground, and the line *G* those which go to form the back of the ground. A modification in the manufacture of the cloth may be made, as illustrated by Figure 2, by working the face yarn eight picks to the round, thus:—the first, second, and third picks, tabby in one shed, the fourth, fifth, sixth, and seventh picks, reverse tabby, and the eighth pick, the same tabby as the first three picks. Other modifications might be made with three picks to the round, or with six picks to the round. In the first case, see Figure 3, by using one coarse pick in place of the first and second picks of the four to the round pattern, and, in the second case, see Figure 4, by using one coarse pick in place of the first and second picks, and one coarse pick in place of the fifth and sixth picks of the eight to the round pattern; or the six picks to the round pattern might be further modified, see Figure 5, by weaving the two coarse picks together, and the four fine picks together, still putting three picks in each face shed, and changing the shed between the two coarse picks, and in the middle of the four fine picks, that is to say, one coarse pick and two fine picks are put into each face shed. All the modifications given above, however, would produce similar cloth to that woven by the four pick to the round pattern first described, i.e., a cloth having a raised figure on a comparatively fine ground.

The imports of cotton goods into Canton are about the same as in 1888. The silk exports have largely increased, compared with the corresponding period of the two previous years.

## Profit Sharing.

### THE VIEWS OF AN ENGLISHMAN.

#### THE SCHEME OF A GERMAN IN AMERICA.

The subject of profit sharing is one which has exercised the minds of large employers of labour for a long time, and we, some time ago, alluded to the subject in the columns of this journal. We have, from time to time, received opinions of different men on this subject, probably the most interesting being that of Mr. Alfred Dolge, a German manufacturer of Dolgeville, U.S., as it is based upon years of actual experience of profit sharing. We will here state a few facts taken from this gentleman's speech, at the twenty-first dinner given to his employés, which took place recently, and we will also give particulars of his scheme for the distribution of earnings which has been developed in various ways, as experience has suggested, for the formulation of, in his opinion, a perfect scheme. Before, however, entering upon this, we will give extracts in a readable form from an article in the *Huddersfield Examiner* on the subject of Profit Sharing, by Mr. G. P. Norton.

"Profit sharing may become a parallel movement by which the employer will seek to retain the privileges due to mastership, and, at the same time, to secure the goodwill of his workpeople. There is, undoubtedly, a vast field for the application of profit sharing, provided that it can be shown to be feasible and an improvement on existing methods. The chief attraction to the worker of payment by wages is that it provides a fixed and certain income, without risk of loss. The chief defects of the wages system are that it takes too small account of degrees of industry and skill, and it does not offer sufficient inducement for individual effort. "The ordinary employer pays the least he can for labour, and labour, for the most part, gives the least it can in return." Payment by time wages fails notoriously in producing the quantity of work of which labour is capable, and the piece-work system was introduced to remedy this defect. The remedy, however, produced another evil, for while the quantity was increased, the quality deteriorated, because of the workers' undue haste and want of care. Again, neither piece-work nor time wages offers any adequate motive for care and economy in dealing with materials, implements, and machinery. The wages system, as a whole, involves the constant antagonism between employer and employed which finds vent in lock-outs and strikes. It is hardly possible to measure the mischief arising from these methods of industrial warfare. Many attempts have been made to perform the work of adjustment with less friction. The sliding scale has been applied, as an automatical regulator, to collieries and mines, but the practical difficulties in the way of working the scale have rendered it, to a large extent, ineffective. Arbitration, and the intervention of disinterested parties have done much to make peace, but these remedies ought not to be required. The desideratum then, it would appear, is a system which will not only remove the antagonism between the employer and the employed, but will make their interests mutual, and so distinctly mutual that the employé shall be able to appreciate the fruits of his extra zeal, skill, carefulness, and economy. The advocates of profit sharing, appealing to the past as well as to the success of modern experiments, claim that their system answers all requirements. It rewards the worker for his extra exertions, and it gives him a share in the savings effected by his own economy and ingenuity. It is a sliding scale in itself, easily and accurately adjusting the division of fluctuating profits. The claim to these advantages will doubtless be readily allowed, but the manner in which the participation is to be carried out, so as to satisfy both the employer and employed, requires much consideration. In the first place, the importance attached by the worker to a fixed and certain payment in wages has already been mentioned, and it is generally agreed that under existing conditions the wages paid should not be less than the usual market rate; the profit sharing being in addition. The next step is to satisfy the employer that his income will not be decreased in order to provide the workers' share of the profits. Now, the strongest argument in favour of profit sharing, assuming that it can be maintained, is that it creates the fund which it proposes to distribute. The scheme upon which the profits are shared very widely. Some of the French establishments have most elaborate methods of division; such as would, probably, be wholly unsuited to the ordinary English mind. Only a plain scheme, easily comprehended, even though less effective, would be likely to find ready acceptance in England. The methods of participation may be classified under three general heads:—(1) Immediate participation; (2) Deferred participation; (3) Mixed participation. In immediate participation, the workers' share is paid in cash. In deferred participation, the share is retained, and either applied towards the purchase of shares in the capital, or passed to the credit of a provident, mutual, or pension fund. In mixed participation, a part of the workers' share is paid in cash, and the remainder is treated as deferred participation. Provision is usually made for a reserve fund before the profits are distributed. The workers' interest in the provident, mutual, or pension fund is sometimes defined by a specific amount being carried to his credit at each division of the profits. In other cases, the funds are general, and provide pensions in old age, assistance in sickness or emergency, and a payment to the participant's family at his decease. Where a definite sum is accumulated to the worker's credit, subject to various restrictions, it may be withdrawn wholly, or partially, on reaching

a certain age, or, in case of sickness, emergency, or death. Many of the methods adopted by friendly societies are incorporated into the administration of these funds. The capital of the fund is usually invested in the business, but, in some cases, it is invested in the securities selected by the employer on consultation with a committee of his workpeople. Some of the larger profit sharing establishments appropriate part of their profits to the maintenance of schools, libraries, building funds, and other institutions for the benefit of their workpeople. The general introduction of profit sharing into Great Britain has, undoubtedly, been retarded by the abandonment of the experiments made by Messrs. Briggs and Co., at Whitwood Collieries, Normanton, and Messrs. Fox, Head and Co., at the Newport Ironworks, Middlesbrough. The evidence of these cases is rather in favour of the principle of profit-sharing than against it, but the fact of the abandonment has certainly produced a distinctly adverse impression. After a long interval, the system appears to have received fresh impulse, and, during the past few years, several British firms have announced their intention of admitting their employes to participation. A noteworthy example is that of Wm. Thomson and Sons, Limited, woollen manufacturers, Huddersfield. Mr. Geo. Thomson is a disciple of Mr. Ruskin, and an enthusiastic supporter of co-operation. He converted his business, in 1886, into an industrial partnership, under which, after charging 5 per cent. upon capital, and placing 10 per cent. of the profits to a reserve fund until the fund amounts to 10 per cent. of the capital, the employes are entitled to five-ninths of the net profits. The remaining four-ninths may be applied as the committee of the society directs, and have actually been distributed to co-operative societies dealing with the concern by way of bonus on purchases. The workers' bonus is retained and applied in the purchase of shares in the capital of the business. Mr. Thomson has informed the present writer that "the general result has been most satisfactory upon the work and workers, and that a sense of real fraternity pervades the mills." Messrs. Thomas Bushill and Sons, printers and stationers of Coventry, have introduced profit sharing into their business, which is still carried on under a private partnership. A "Reserved Limit" has been communicated to a chartered accountant, who certifies the sum due to the workpeople in respect of bonus. The amount of profit made by the firm is thus kept secret. Cassell and Co., Limited, the great publishing house, have introduced a system of deferred participation, as well as methods by which their employes may become shareholders in the capital of the company. Amongst the remaining British profit sharing firms may be mentioned Blundell, Spence and Co., Limited, colour and varnish manufacturers of Hull, and Tanyges, Limited, engineers, Birmingham. There are several firms that are giving an indeterminate bonus, e.g. Messrs. Waterlow and Sons, Limited, stationers of London, and others who have adopted profit sharing partially. In the United States, the firm of Pillsbury and Co. of Minneapolis, the owners of the largest flour mills in the world, and the great dry goods firm of John Wanamaker, stand out as conspicuous examples of profit sharing. The success of experiments in profit sharing thus far has varied according to the degree of intelligence of the workers. For this and other reasons, a partial application, and subsequent gradual extension of the principle, is often preferable to a full adoption of the system all at once. A nucleus of managers, overlookers, and the *élite* of the workmen, being first admitted to participation, the privilege may be extended according to personal merit, length of service, or other qualifications. The *noyau* or nucleus of the *Maison Leblaire* has been an important element in the development of that establishment, and the principle, wherever adopted, has had an educational and moral influence on the remainder of the workers, which has largely contributed to the success of the system.

At this point, it will be interesting to give Mr. Dolge's plan as set out at the dinner above mentioned. Mr. Dolge says:—It is with pardonable pride that I lay before you, to night, my plan for the distribution of earnings, which, having passed the stage of uncertainty and experiment, has now developed into a formulated system. Earnings shall be distributed under the following three classes: 1—Pension; 2—Life Insurance; 3—Endowment. With the aid of the most able legal advice I could obtain, I have drawn up laws for each of these three classes. They are easily understood, and I will give you only the preamble in full:—In order that the male employes may receive a share of the net earnings of the business, over and above their wages, the house of Alfred Dolge has, after several years experimenting with a Pension and Life Insurance Plan, formulated the following rules and regulations for the just distribution of such net earnings amongst its employes, to take effect on January 1st, 1890, revoking thereby the Pension Law of 1882, and the Insurance Law of 1886. There shall be three classes for this distribution, viz: 1—Pension. 2—Life Insurance. 3—Endowment. It is intended that the share of the net earnings, which is to be set aside each and every year, if there are any, shall be calculated upon the positive results of the records as kept by the said house of Alfred Dolge, and which shall be known for all the purposes of the distribution provided for herein as the manufacturing record of the work done by the employes, and the general producing capacity of the business caused by the exertion of the employes. It shall, however, be entirely within the discretion of the said house to decide how much of the net earnings of the business shall be set aside for this distribution account. Against this distribution account, the amounts paid for life insurance under the provisions of the insurance law, and the amount necessary to maintain the pension fund, are to be

considered fixed charges. If, in any business year, the net earnings should not be sufficient to cover the amounts paid for life insurance, and to the pension fund, such deficiency shall be forwarded as a charge against the net earnings of the year following; the remainder, after payment of such fixed charges, shall be dispensed under the provisions of the endowment plan. The gist of the laws is about as follows:—1. Pension. Every male employe, who is over 21, and not over 50, years of age, is, after a continuous service of 10 years, entitled to a pension, in case of partial or total inability to work, caused by accident, sickness, or old age, at the rate of 50 per cent. of the wages earned after 10 years' service, 60 per cent. of the wages earned after 18 years' service, 70 per cent. of the wages earned after 16 years' service, 80 per cent. of the wages earned after 19 years' service, 90 per cent. of the wages earned after 22 years' service, 100 per cent. of the wages earned after 25 years' service. In case of accident while on duty, or of sickness contracted through the performance of such duty, each employe shall be entitled to 50 per cent. of his wages at any time previous to the completion of 10 years' service. Pension is in no case to exceed \$1,000 per year. 2. Insurance Law: Every male employe having been in the employ of the house at least five years continuously, after attaining the age of 21 years, is entitled to a life insurance policy to the amount of \$1,000. On completing the tenth year of service, to a second policy of \$1,000; and after the completion of his fifteenth year of continuous service, to a third policy of \$1,000. Employes, entering the service at any time between 22 and 28 years of age, shall be entitled to not more than two policies of \$1,000, one after five, and the other after 10, years of continuous service. For all employes who enter the service at the age of 41 years, and for all those rejected by the life insurance company, the amount of \$35 shall be yearly deposited, but, in no event, shall principal and interest exceed the sum of \$1,000. In case of death, the amount then to the credit of any employe shall be paid over to his heirs or assigns. 3. Endowment: Every male employe over 21 years of age, and who has been in the employ of the house for five consecutive years, shall be entitled to an endowment account, upon which he will be credited at the end of each year according as the manufacturing record shows that he has earned more than has been paid to him in the form of wages. If, through gross carelessness, any employe has caused the house a loss, such loss will be charged against the above account. This endowment money shall be payable to such employe only on his arriving at the age of 60, or upon his death. Interest at the rate of 6 per cent. will be credited upon any balance at the end of each year, but, if an employe quit the employ of the house, or be discharged, interest will cease at once, and the principal will be paid to him when he is 60 years of age, except in case of death, when it will be paid to his heirs or assigns, sixty days after proof of death has been furnished. Against this account, any employe may obtain a loan, not exceeding the amount of his credit, by paying interest thereon at the rate of 6 per cent., and by giving good and sufficient collateral security. Neither of these laws impairs the right of the house to discharge an employe for any cause or reason, or the right of the employe to quit, at any time, for any cause or reason. These are, in plain English, about the main provisions, stripped of all legal phraseology. After a most careful study of all the known systems of so-called profit sharing, I come before you to-night in the assured belief that this system is the only practicable one of all the different devices for the amelioration of the condition of the working people, for the reason that it is the only one which is not projected from any idea of benevolence, but is based on self-interest. It is not profit sharing—it does not in the least resemble Communism or Socialism, or the scheme of paternal government now in practice in Germany. It appeals, in all its phases, to the egoism and self-interest of the employes, as well as of the employer. It is in direct opposition to paternal government, Socialism, and Communism. It depends entirely upon the development of each employe's individuality. It places the employe on the same level with his employer, it puts him on his mettle and rewards him according to his own merit. He is not hired for so many dollars, but gets paid according to the work he does, exactly as does his employer. It provides for his future upon the approved plans of life and fire insurance systems, without depriving him, in the smallest degree, of his personal liberty and independence.

The above scheme should be worthy the attention of all interested in the distribution of earnings, or profit sharing. It is the outcome, as we before said, of years of experience of one who has studied the welfare of his employes, and we have no doubt the scheme will work to the satisfaction of all concerned in it.

### Gigging.

The next great process in the art of finishing, which demands our attention, is that of gigging. We did propose taking up steam finishing just at this stage, but have decided not to consider that till later on in the series. It is in this process of gigging that the special foundation is laid for each desired finish. This foundation consists in the formation of what is known as a "nap," by straightening and laying the felt and burls which were produced in the operation of fulling. All the differences in finish necessitate a difference in the condition of this nap, and, consequently, a writer who would do the subject justice would be compelled to take up each finish separately, and to give the special directions necessary to obtain it. This we have not space to do, and so must



content ourselves with dealing with a few of the special points in the process which may be of interest to the finishing public. A difference of treatment at the gigs is demanded, not only because of difference in finish, but, also, on account of difference in the weight and the condition of the fabric. The desired end could never be obtained by giving the same work to a 16-ounce cassimere as to a 30-ounce beaver. Neither would a face-finish tweed and a light piece of dress goods be satisfactory if they were both treated in exactly the same manner throughout. Take, for instance, a piece of goods that is so woven as to have its design more dependent upon the arrangement of threads and upon the special weave than upon the colours, and we have at once a case where only a certain kind of treatment at the gigs would ever do. This fabric could only have its design properly brought out by a threadbare finish, and a long nap on such a piece would only spoil the whole effect of both pattern and weave. The operative, then, who thoroughly understands his business, must adapt his work and his methods to the case in hand, and aim so to clean out the thread as to make both appearance and design all that could be required. The other extreme would be a kind of goods on which a face finish and a steam lustre are what is wanted. Here, now, the operator, instead of cleaning out the thread, must so gig as to produce a compact nap which will cover the threads and hold the finish desired. Then the effect which lies between these two extremes is where a soft and velvety appearance is desired, and, at the same time, the design which may be dependent either upon colours or weave, or upon both, must not be destroyed. Here, now, the nap must be shorn down, but the fibres are not to be touched. In this way, the desired feel is obtained, while the design is neither injured nor covered from wear. We see that all these widely differing effects are to be produced by different treatment at the gigs, and hence the absolute necessity that the gigger be a man both of judgment and of experience, so that the one on whom so much of the finisher's success depends may be worthy of the charge. In looking at the styles of machines now in use, we find that there are several different kinds, but, by the right kind of use, we shall prove that good results may be had from all of them. Some finishers hold that the best results may be obtained now from the use of the old-style up-and-down gigs, since, in these machines, the friction is more easily regulated. Be this as it may, no one can hardly help admitting that the new style of machinery is usually preferable to the old, and will give, under ordinary circumstances, as good, if not better, results in considerably less time. The quadruple gig is commonly very highly recommended, because it is said that it will do its work so much quicker than the other styles now in use. This is accomplished by allowing the fabric to come in contact with the teasels four times each run. But, if the effect of using such a machine be carefully noticed, it will be seen that the teasel points become broken and bent back, and are often altogether useless long before they should be really worn out. This is owing to the fact that so much of the cylinders is used at once that there is almost a constant drag of the teasel points upon the surface of the cloth. If there were only two points of contact instead of four, then the teasel point would have a chance to regain its normal position before the next contact was reached, but, where there are four, this is not possible. The action should be sharp and quick at one point, then time should be given for the teasel to right itself, ready for the next point of contact, before it becomes worn out and spoiled by the continual drag on the cloth, which not only injures permanently the condition of the teasel, but also the quality and value of the finish as well. As a side point, we might dwell for a minute or so on the care and use of the teasel itself, and find a few ideas that would be of interest. When a lot of teasels is first received at the mill, they should be at once removed from the barrels or boxes in which they came, and be stored in a dry and airy place. If they were to stand in the barrels for any length of time, or if they were stored in damp rooms, they would again absorb moisture, and become mouldy and unfit for use. More than this, it is evident that, under such circumstances, the uneven pressure on the teasels would force the points more or less out of place, and destroy the strength and shape of the hook. The most important point to bear in mind when mounting the teasels in gig slats is that they must be pressed closely into place so as to present a compact and even surface. It would never do to leave any open or vacant places between the teasels, since, by changing from wet to dry, and by continual use, they would most likely shrink somewhat, and, unless they are perfectly tight at the start, they will be in danger of dropping out during the working and cleaning. It is well to wet the teasel in cold or lukewarm water in order that it may be the more easily crowded into place, but hot water must not be used for this purpose. When it happens that a new set of teasels is being used for the first time, care must be taken not to set the cloth so near the teasel points as to allow them to take too strong a hold at first. If heavy goods are on the gig, it is very likely that carelessness would spoil a set of teasels in a short time in this way. Never run the cloth too near a new set of teasels. It will be found vastly better to use two sets of old ones, in such a case, than one of new, and, by so doing, both teasels and cloth will be saved much damage and injury. Another way by which teasels are often spoiled is to leave them too long in the same position without being changed. If, after some time on wet work, the teasel become wet through, the thorn or point will naturally grow limber, and do little or no good. Now, in this case, remove these damp slats, and, while they are being dried out, use dry ones in their stead. The more frequent the drying, the better and quicker the work. For when once the points become wet, they only

drag over the surface of the cloth, and do no possible good. It is often well to remove the teasels from the slats altogether, and then to remount them all in changed and new positions. This prevents undue waste and extravagance, by enabling them to be used a second time with almost as good success as at first. As regards the wetting of the teasel when mounting, it may be urged that such a course is unnecessary, and only serves to give the teasel much better reason for rotting and decaying from the dampness. This is, no doubt, in great measure, true, and we would not advise the wetting of the teasel for this purpose where the moulder has plenty of time to spend at his work. We really believe that the less moisture gets at the teasel points the better, and if the operative has time to spend in mounting dry, so much the better for the teasels, and the gigger too. But, in large mills, where a hand is kept busy at this work alone, much quicker time may be made by moistening the teasel. The ideas to be followed in giggering are quite the same, no matter what kind of gig is used. There are the wire gigs, the teasel gigs, the up-and-down gig, the rotary gig, and the double cylinder rotary gig. The greatest difficulty to be overcome in the construction of the gig is the tension. Uneven tension, particularly towards the end of a piece, is the cause of unending trouble at this step of the process. The Gessner gig for excellence in this respect can hardly be beaten. In giggering a piece of cloth, it is always necessary to begin on teasels that are already somewhat worn. If we did not this "old work," as it is called, at first, we should be apt to injure both fabric and finish, by the use of new and unused teasels at the beginning of the operation. Much, just here, depends upon the time the piece has required in fulling. If a piece has had but little fulling or felting, and requires to finish with a good, thick, nap, we may rest assured that it will be impossible to obtain this finish except at the expense of the fabric, since the teasels will be required to work too much upon the body of the thread. The piece of goods which is to be giggered must not be too wet, nor is it always advisable to have it too dry. There should be just enough moisture to keep the flocks from flying about the room. After hydro extracting, run the piece on a roller, being careful to stretch out all wrinkles and even out the listing, in case it is curled up. When rolled up, lay it down flat on the side of a bench, or hang it in a rack. If the roller is stood up on end, the moisture is sure to gravitate to the lower end, and then as the nap on the dry side of the cloth will not straighten out as well as that on the wet, we shall have trouble with uneven giggering. We may now consider, very briefly, the kind of treatment which must be resorted to in arriving at the various styles of finish required. If the piece is to have a bare thread finish, then the giggering must be so manipulated as to give a clear face to the fabric, so that, after shearing, the pattern and design may stand out distinctly and well defined. If the cloth is set down too close to the teasels at the start, the threads are apt to be cut, thus destroying the body of the fabric as well as the design. Be careful to keep the goods, where much work is required, sufficiently moist, as the teasels will cut a dry thread much quicker than a moist one. It is also quite important that goods which are to receive this finish should be all made in the loom. They must be heavy enough in the grease to require little or no shrinking, in order to make up the required weight. If this is not the case, we should find that the felting would so cover and compact the threads of warp and filling that it would be next to impossible to clean them out sufficiently to attain the finish required. Now, in working on a face finish, we shall see that quite different treatment is required. In this case, it will be an advantage if the piece is so woven as to demand considerable fulling and felting. The nap necessary cannot possibly be raised at the gigs, unless there is a good solid body on which the gigger may work. Hence, for a successful face finish, good felting stock must be used in the piece, and plenty of width must be allowed for shrinkage in the mills. This is absolutely necessary. If there is not sufficient body to the fabric, the teasels will begin to work on the thread, thus producing not only a thin and unsatisfactory nap, but also hopelessly injuring the fabric itself.—*Boston Journal of Commerce.*

(To be continued.)

### Production of Pine-Apple Fibre in India.

The *Calcutta Statesman* of the 14th December, in the course of a long article on the uses of the pine-apple fibre, says:—"It is almost a truism to say that no new or untried natural product, however useful, or even valuable, in an economic point of view, can ever stand a chance of becoming an article of commerce, unless it is put into the market in a form that admits of an easy test of its fitness and capabilities for practical purposes. The rapid popularity attained by jute as a textile material was owing largely to the care with which the finest qualities of the fibre were developed in the samples shipped for trial in Dundee and Glasgow. That the undoubtedly superior fibre of the pine-apple plant is not in such general request as it ought to be, and might be, is, we fear, due entirely to a neglect of the conditions which would have adapted it for ready experiment. In a note in the last issue of the *Calcutta Agricultural Society's Journal*, Mr. R. Blechynden has collected and set out such information as he has been able to gather from books and other publications regarding the uses to which the leaves of the pine-apple plant are known to have been applied in India and in other countries. As this knowledge is calculated to open out a new and remunerative industry,

we think it is very desirable that a systematic effort should be made for the development and utilisation of what Mr. Blechynden describes as 'one of the most interesting, promising, and valuable, fibres of India.' In order to awaken public interest to the economic value of this fibre, we shall draw upon Mr. Blechynden's note for such information as may give some idea whether its preparation for textile purposes is likely to be a source of profit to the agricultural classes of this country. The industry would appear to be not altogether new. The pine-apple has long been cultivated for its fibre in India, having been introduced into Hindostan from Malacca, during the reign of the Emperor Akbar. Indeed, it is still an article of trade in the Eastern islands, and in the Philippines it is manufactured into a cloth (pina) 'well known to be of great strength, durability, and beauty.' The fibre is also largely exported to China, where it is woven into linen. As regards India, we find that it was in 1834 that Colonel C. T. Watson brought to the notice of the Asiatic Society of Bengal that the people of the Khasya Hills utilised the pine-apple fibre for the net pouches or bags which generally formed a part of their equipment. Two years later, Dr. Wallich saw it applied to the same purpose, and in writing to the Agricultural and Horticultural Society said, 'Considering the enormous quantity of pines grown in that range (Khasya Hills), the plant appearing as if it were quite a natural production, the fibre of it is worthy of attention.' No action, however, was taken on Dr. Wallich's hint. As a fact, the pine-apple plant grows, and can be made to grow, on almost every part of India. It has hitherto, without much trouble, been raised exclusively for its fruit, but its cultivation for the fibre will be no less simple. The production of fruit and of leaves, it is generally admitted, 'in no manner interferes with each other, the leaves being fittest for fibre after the fruit has ripened.' The largest, and most mature, leaves are said to yield the finest fibre. The cheapest and most thorough process of extracting it in a way to exhibit its best qualities is, therefore, all that is wanted to place it in its proper position among the most valuable fibres suited for textile fabrics of the higher class. In the Khasya Hills, we are told, the leaves are gathered before the rains set in, and, after they have been soaked in water for some time (not specified), they are beaten out in order to separate the fibre. The Chinese process, as followed in Singapore, is as follows:— 'The leaves, recently gathered, are laid upon a board, and the epidermis is removed by a broad knife, not unlike in form to a shoemaker's paring knife. Upon its removal from the upper surface of the leaf, the long and beautiful fibres were seen lying upon the lower and denser epidermis running in a longitudinal direction; the fascicle of fibres were then readily detached, either by hand, or by being raised by the broad knife. . . . The first appearance of the pine-apple fibres would not cause one to suppose it to be so remarkably fine as it really is, but, by taking one coarse fibre, it is found capable of being subdivided into threads of such delicacy as to be barely perceptible, and yet sufficiently strong for any purpose.' Experiments recently made with the leaf in the Seaboard Engineering College showed that steeping destroyed the fibre. The Agri-Horticultural Society, however, have since made up a sample of fibre prepared by hand and heckled, and it is believed that this fibre, if properly prepared, could be mixed with cotton or wool as a substitute for silk. Indeed, we are told that some thread was made out of it by a Miss Davy so far back as in 1839, and, under her direction, it was subsequently manufactured into cloth, which might, with more experience of the fibre, have been made equal to the fine fabric of Manilla. Mr. Blechynden notes that a Mr. Zincke has taken out a patent for the manufacture of thread from this fibre, as he is satisfied that, by subjecting it to the process of bleaching, it becomes pliant enough to be spun in the manner now adopted with flax, and by the same machinery. Here, surely, is a fit opportunity for the Agricultural Department of the Government of India to step in and direct experiments to be prosecuted on some prescribed system, in districts where the pine-apple plant is found already growing in abundance. When the most suitable methods and conditions for the extraction and preparation of the fibre have been thoroughly ascertained and made known, we have no doubt that private enterprise will take up the new industry with the same vigour as was manifested in the manufacture of jute, especially as, like jute, the pine-apple plant can be raised at little cost and trouble, and, still better, as a subsidiary cultivation."

### A New Vegetable Rato Material.

During the past few years, particulars of new vegetable fibres have occasionally been given in the textile publications of this and other countries, some of which have received considerable attention, but, in many cases, the cost of manipulating the material, and bringing it into form ready for spinning and weaving, has been so great that what appeared good in theory was found in practice to be of little value, because the excessive expenses incurred in its working rendered the prepared material so costly that the fibres they were intended to supersede, or supplement, were much cheaper. In other cases, new fibres have been introduced, and have been found, in every respect, practical. These have been, hitherto, few, but, recently, our attention has been drawn to the vegetable fibre, introduced by the "New Textile Syndicate," Limited, of 5, Copthall Buildings, London, E.C., whose works are at Popeley Mills, Gomersal, near Leeds. There is a prejudice shown by some spinners and manufacturers against new materials, and it has often been the case that not until a few have tried them and found them

practical have others even permitted their attention to be drawn to them. But we are sure that the vegetable fibre under notice will interest all those engaged in the textile trades, and more especially those in the woollen industry, as the samples of raw material, yarns, and cloths, speak for themselves. We have had an opportunity of going thoroughly into the work as now being carried on by the New Textile Syndicate, who have made innumerable experiments with the fibre in question, and in carrying these out have so perfected their machinery that the necessary operations for producing their yarns, &c., are simple in the extreme. In the treatment of the fibres, the vegetable properties are eliminated, and what may be termed animal properties are given to them, the treatment being carried out in such a manner that the raw material has become possessed of milling or felting properties, and, further, by subdividing, opening, softening, and extracting all impurities therefrom, a material is produced that can be spun alone, or in combination with any animal fibres. There would be many, we have no doubt, who would have been inclined to disbelieve this statement, but these specimens of the raw material, yarns, and cloths, made from them, which we show in the circular printed with this number, are practical demonstrations of their utility, and the prices annexed show that they are really marketable. It will be seen that any shade of dye can be given to either the raw material or to the yarns, and the glossy and brilliant colours are guaranteed to be as fast as those on any other similar fibres when produced in a like manner, and the fibre so treated can be used for all purposes where cotton waste and cotton of a superior quality are invariably used, and as it excels these in milling properties, as well as in strength and durability, and also in cheapness, it is sure to meet with a favourable demand as a substitute for these fibres. In an unmiated state, it can be spun into a fine and very even yarn, which is especially suitable for weft, in the manufacture of linen and cotton fabrics, hosiery, &c., for it has been proved that it can be produced cheaper than the cotton yarns generally used for these purposes. The new material has already been tried, thoroughly tested, and most favourably reported upon, by large and well-known firms. Samples, quotations, and further particulars of the vegetable wool and yarns, can be had from the Company by applying to the Manager at the works.

### Recent Customs Decisions.

UNITED STATES.—The following decisions affecting the classification of articles in the Customs tariff and the application of the Customs Law of the United States have recently been given by the United States Customs authorities:—Certain so-called "cotton corduroys," not the "corduroy" of commerce, inasmuch as it differs from that class of merchandise in being constructed without a pile, and is woven in an entirely different manner, the cloth being readily countable, and being generally so high in price that the duty would, under the clause in the tariff for cotton cloth, be 40 per cent. *ad valorem*, whether under or over 100 or 200 threads to the square inch, is dutiable at that rate. Dress goods composed of wool and cotton are properly dutiable at the rate of 7 cents per square yard and 40 per cent. *ad valorem*. Certain so-called "jute press cloth," being a single warp jute fabric, 45 inches in width, weighing 25 ounces to the yard, and woven of three and four fold yarns, hard twisted; manufactured for the special purpose of a straining cloth in the process of expressing grease from pork-scraps, and though its expansiveness would preclude its general use for bagging purposes, resembling bagging in many respects, is dutiable at the rate of 40 per cent. *ad valorem*. So-called "crochet covers" crocheted by hand from silk thread or yarn, and though the same may be used as button covers, suitable for, and used in, the making up of trimmings and ornaments for women's cloaks and dresses, are dutiable at the rate of 50 per cent. *ad valorem*. A thin textile fabric of cotton, which has been immersed in gelatine, glue, or other similar substance, and passed through hot rollers, which has had the effect thoroughly to close the interstices, and thus to render the fabric dust-proof, cotton being the component material of chief value, is dutiable as a manufacture of cotton not specially enumerated or provided for under T. I., 324, at the rate of 35 per cent. *ad valorem*. Silk and wool cloakings not commercially known, or sold, as dress goods are dutiable as manufactures in part of wool, at the rate of 35 cents per pound and 40 per cent. *ad valorem*. So-called "De Gras," a mixture of cotton seed, and other oil, with which wool is saturated before carding, and the natural wool fat liberated from the wool itself in various ways, the word "De Gras" signifying "an oil expressed from skins" is dutiable at the rate of 25 per cent. *ad valorem*. Certain spun silk, found on microscopic analysis to consist approximately of:—Silk 61.05 per cent.; wool 30.60 per cent.; ramie 5.30 per cent.; cotton 3.04 per cent. is dutiable as manufactures composed in part of worsteds.

ARGENTINE REPUBLIC.—All merchandise from foreign countries shall pay an import duty of 25 per cent. on its value in bond, except the following articles, which shall pay:—Forty per cent., stuffs of silk or mixtures in general, braid trimmings and cords of the same materials. Paris laces (pinetas de Paris), fine lace, and brass wire. Fifteen per cent., linens (lienços), bramants (bramantes), angolas, tapes, cotton tickings (cotin de algodón), chintzes (zaragás). Five per cent. sacking, silks for embroidery and sewing, engines worked by steam, gas, compressed air or electricity, and duplicate parts for the same. All kinds of produce and manufactures of the country are free of export duties.



## ORIGINAL DESIGNS.

On our first plate we give a design suitable for Cretonne and other fabrics.

Our second plate contains a design for Tapestry Fabric, drawn by Mr. C. W. Sandiforth, 103, Racecommon Road, Barnsley.

On our third plate is a design for a Brussels Carpet, which will make an effective pattern.

## MONTHLY TRADE REPORTS.

**WOOLLEN.**—The aggregate number of orders given during the month cannot have fallen short of the expectations of producers of cloths, especially in the case of those who are in the fancy trade. The open state of the weather in February interfered, to some extent, as regards repeat orders, nevertheless, manufacturers have kept busy. There have been numerous inquiries for patterns of a novel and fancy character in cloths of various kinds for spring 1891, and some few orders have already been booked, and much business would, undoubtedly, have been done but for the fact that merchants generally have been offering lower prices, and such as manufacturers, in the present aspect of trade, have been indisposed to accept, hoping that, by holding out, they would secure full rates. There has been a marked falling off in the orders for worsted coatings, but the deficiency has been more than counterbalanced by the demand for serges, which has been on an unusually large scale. In the production of this class of cloth, manufacturers have recently made rapid strides in their general get-up, and as regards designs and finish there is little more to be desired. In fabrics of the tweed and Cheviot class, also, a good business has been done, and the same may be said of meltons, unions, and such like cloths, those for the ready-made clothing trade taking the lead.

**LINEN.**—This branch has been rather quieter than during the preceding month, especially in the ordinary grades of goods. Damasks have ruled a shade quieter, and the same may be said of plain and fancy drills. In sheetings and linen huckabacks, a fair trade has passed, and the demand for bordered, twilled, and other, towellings, and for domestic cloths generally, has been steady. This being the opening of the season for sunblinds and similar fabrics, a favourable business has been done, and the production is increasing. Prices all round are rather low, and there is, as usual, much keen competition in the various branches.

**LACE.**—This industry, with some few exceptions, remains in a quiet condition, but there seems to be a prevailing opinion that an improvement in the different departments will shortly take place. The busiest branch is that of curtains, in which, recently, a more favourable business has ruled than has been the case for months past. Plain nets have not passed freely, although prices are very low. Millinery laces have sold fairly well, but, fashion being against many classes of these, the prospects for them are not cheerful. Silk Chantilly laces have improved in demand, and a good business in these is expected as the season advances.

**WOOL.**—Although the London Sales closed with a firm tone, the prices in the wool consuming districts have been notably lower and, generally, a quiet feeling has prevailed in the wool trade during the month. As orders for yarns have been few, spinners have bought wool meagrely, and only when a concession in price has been allowed. In the yarn branches, there has been a decided falling off in new business in nearly all departments, prices offered by merchants having been lower all round, and, in many cases, where spinners have been running out old orders, these rates have been accepted for new contracts. In Botany yarns, the falling off has been marked, owing to the slackness pervading the coating and cashmere branches. The piece trade has also been much quieter, and makers of worsted coatings who, for months past, have had such a good time, are generally in a quandary as to how to employ their looms. Serges have recently largely taken the place of worsted coatings, and the prevailing opinion seems to be that they will have a run for some time to come. In fancy dress goods, a moderate trade has been done, but, for new contracts, manufacturers have to make concessions in prices, and many complaints are prevalent of the low rates offered.

**COTTON.**—The trade of the past month has been very unsatisfactory, both as regards extent of transactions and prices in relation to cost. Early in the year, the prospects of an increased trade seemed very bright, but these have, by no means, been realised, on the other hand, it is extremely likely that, unless there is a revival of business quickly, much short time will be run. The sales of raw material have equalled the average and, at present, there are good stocks in spinners' hands. Yarns for export have not moved off very freely and, as orders generally for China and Japan are running out, spinners are getting anxious for new contracts. For India, many orders have some little

time to run, and inquiries are being made for this market. For the Continent, buyers have operated sparingly and orders have been few. The home trade has also shown a decided want of tone. In cloth, the markets have been anything but encouraging, and the orders that have been taken, have been to prevent a stoppage of looms, which means, generally, taking them at low prices. The sales of shirtings for China, India, and Japan, have been fair as regards the better qualities, but other kinds have been neglected. Printing and bleaching goods have been about as last month, and for Egypt, South America, and the Levant, a moderate business has passed. The home demand, especially in heavy goods, has been quiet, and stocks of the latter are beginning to accumulate. Prices for most kinds of yarns and cloths may be quoted a shade easier than was the case last month.

## The Export of Textile Manufactures.

Recently, Mr. W. Whitehead delivered a lecture, in the Lecture Room of the Yorkshire College Textile Department, on "The Export Woollen Trade." Mr. Jonathan Peate, who presided, said that to those who, like himself, were engaged in the manufacture of goods for foreign consumption, the subject was an interesting one, whether they regarded foreign competition or the tariffs by means of which we were handicapped. In the past, English manufacturers had had much of their own way, and we had not to face anything like the present competition or the skill which was now displayed abroad. There were some peculiar features connected with the present state of things. We had, for instance, a country like France building round herself a kind of Chinese wall, reared for the purpose of keeping out, as effectually as possible, English-made goods. A similar policy was being followed by Germany. Instead of being, like us, economically progressive, Continental nations used every effort for the purpose of preventing the importation of foreign goods. Mr. Whitehead gave a *résumé* of the export trade, from 1862 down to the present time, tracing its growth from year to year, and accounting for the deterioration in values by the fact that the better class goods were made abroad, and foreigners only came to us for cheap materials. He described what the Yorkshire College Textile Department was capable of doing in the way of teaching students a better knowledge of colours and combinations of designs. He enumerated the principal countries that were taking goods from us, and urged that we should have largely to rely for an export trade upon India, China, Japan, the States, Canada, Australia, the Cape, and upon countries bound to us by ties of blood. Tariffs were not alone to blame for the falling-off in our Continental trade. We could be fairly charged with want of taste; with want of attention to the dyeing, finishing, and turning out of, chiefly, low goods; with the reducing of qualities, and with other faults. The Germans were making a special study of the needs of the South American market, and would run English producers close. Those competitors, it was obvious, would not obtain a footing in the home market without cause. It was becoming quite the thing to see what Germans produce first, and then for English makers to follow them. Competition, in the future, would be severer than now, and especially in the neutral markets. Perhaps, in the course of time, the Continental nations would adopt Free Trade, and receive our goods in return for their own, while, eventually, a Christian Power might be located at Constantinople, and a vast field thus opened out. The demand by the American manufacturer of free wool from the grower would help on the Free Trade movement, which, he believed, would be disastrous to this country, not, perhaps, in the immediate future, but within a measurable distance of time, since the whole South American, Chinese, and Japanese trade would be at their feet. While in 1850 only 39,250 hands were engaged in the mills of America, now the number was 161,499. America was so much alive to an export trade that, in due course, she must become our great competitor. China and Japan would, in the future, be open to railway and other civilising agencies, which would create for us a trade, of the dimensions of which we had little conception. Burmah, when settled, would give us communication to China, and help us to command a large share of the Chinese trade. India and Australia would demand more supplies, and Africa would, in course of time, be interesting enough for business, and especially Egypt, which under England's rule had a fine future in store, while South America, unfitted from climatic causes for manufacturing purposes, must become more than ever a much larger consumer. Thus there was still reason for hope. It was essential that we should have a Minister of Commerce—a more important question than whether women should vote. Our Consuls might have a little more of the business, and a little less of the official, character about them. Technical education for the workman, as in Germany, might become a reality, and, in its turn, help the production of better work. The lecturer deprecated the artificial forcing of prices as soon as improvement in trade appeared, and before expansion warranted increased rates. Especially was this hazardous, in view of the rivalry of our competitors, in the case of such a commodity as coal. He likewise condemned the action of frantic enthusiasts to secure legislative restriction of the hours of labour. By both political parties the eight hours movement might be pool-poohed, but what was described as a *fad* to-day would to-morrow, in the exigencies of party, be spoken of as gospel. This movement was so vitally opposed to the expansion of our export trade that it must be killed off without delay.

THE JOURNAL OF FABRICS AND TEXTILE INDUSTRIES.

12TH MARCH. 1890.



CRETONNE.



March 12th, 1890.

THE JOURNAL OF FABRICS AND TEXTILE INDUSTRIES.

# RODGERS' PULLEYS

(REGISTERED.)

## WROUGHT IRON THROUGHOUT, RIM, ARMS & BOSS.

### 80,000 IN USE.

The only  
Wrought-Iron  
Pulley made.

The best  
Pulley  
in the World.

Turned  
and Finished  
perfectly  
true in a Lathe.

Split or Solid.



All Sizes  
up to  
24ft. diameter.

The  
only Pulley  
which is  
absolutely  
unbreakable.

The Lightest,  
Strongest,  
and  
Safest Pulley  
made.

Used Exclusively for driving the Electric Light at the late Fisheries, Health, Inventions, and Colonial Exhibitions.

**Sole Makers:—**

## HUDSWELL, CLARKE & CO.,

### Railway Foundry, LEEDS.

Telegraphic Address:—"LOCO." LEEDS.

THE JOURNAL OF FABRICS AND TEXTILE INDUSTRIES.

12TH MARCH, 1890.

DESIGNED BY C. W. SANDIFORTH.



TAPESTRY FABRIC.



THE JOURNAL OF FABRICS AND TEXTILE INDUSTRIES.

12TH MARCH, 1890.



BRUSSELS CARPET.

# SUPPLEMENT

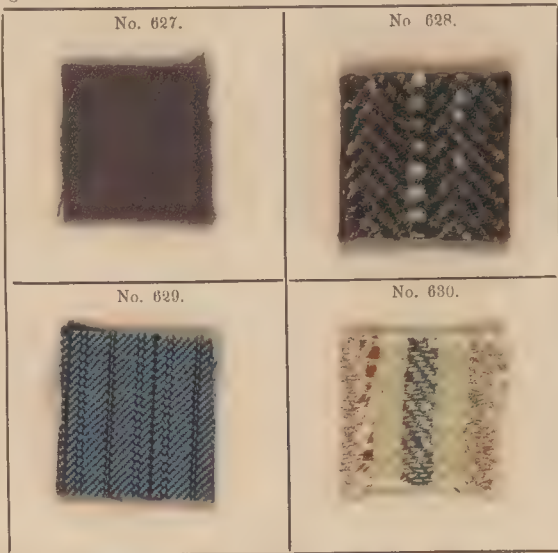
TO

## The Journal of Fabrics and Textile Industries,

MARCH 12TH, 1890.

The following Patterns are Woven Specimens of the Designs given on Page 31.

We beg to inform Manufacturers that we have been  
**REGISTERED AS PATENT AGENTS,**  
 And are in a position to  
**Secure Patents, Register Designs and Trade Marks,**  
 And execute all work connected therewith upon the most  
 reasonable terms. ADDRESS:—  
**JOURNAL OF FABRICS & TEXTILE INDUSTRIES,**  
**10, Ann Place, BRADFORD, England.**



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 And are in a position to

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### To Cotton, Woollen, and Silk Manufacturers.

DR. CLAYTON'S REGISTERED FABRIC TABLES, SCALES, WEIGHTS AND STEEL DIE, enable any person, and without calculations, to ascertain in a couple of minutes, from a small sample the size of half-a-crown, the weight per yard of any Fabric from 17 to 80 inches wide, as likewise the weight of warps and wefts therein. 10s. 6d. post free. Canada and United States, 3 dollars.—Postal Orders payable to H. & R. T. LORD, 10, Ann Place, Bradford, England.

### Cloth Patterns for Spring and Summer, 1891.

Worsteds, Tweeds, Cheviots, Saxonomies, &c., for Trouserings, Coatings, Vestings, Suitings, Costumes, &c.

£2 PER 100 PATTERNS. CARRIAGE PAID.

Order, with Remittance, of H. & R. T. LORD, 10, Ann Place, BRADFORD, England.

7,680 ends in warp; 120 ends per inch; 15's reed, 8 ends in a reed; 62 picks per inch; 64 inches wide in loom; 56 inches wide when finished. 17½ oz. cloth.

8 „ Cream,  
 64 ends in pattern.

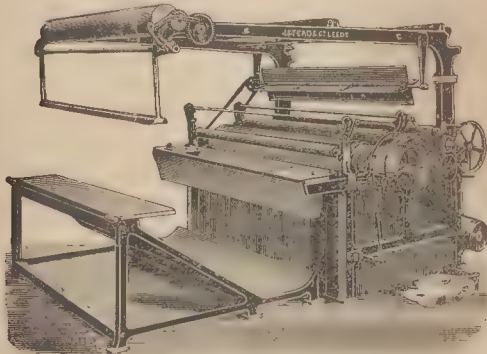
Weft:—24 skeins.



## MACHINERY, &C.

### Patent Brushing and Steaming Mill.

In the finishing of worsteds, serges, tweeds, and like cloths, having an uneven or raised surface, and especially of fabrics that have a well defined rib upon them, difficulties have been encountered in brushing them in a regular manner, for the simple reason that, in many cloths, it has been a work of time and patience in getting the brushes to work thoroughly down to the ground of the fabric. And, again, owing to the brushes revolving in one direction only, the operation touches but one side of a rib or raised portion of a pattern, the cloth having afterwards to be reversed and worked on the other side. Recently, Messrs. J. Stead and Co., the successors to Messrs. W. Kemp and Co., Holbeck Mills, Leeds, who are makers of mechanisms of various kinds for textile purposes, have made improvements in the system of brushing, and have produced a machine in which the brushes can be made to revolve in one direction, as in ordinary machines, or, by a simple contrivance, to revolve in an opposite direction. The advantage of the latter operation will be obvious, as it will be readily understood that, by brushing in opposite directions at the same time, each side of the ribs or sunken parts is brushed equally throughout the piece, and in such an effective manner that, when



J. Stead and Co.'s Patent Brushing and Steaming Mill.

passed to the cropping machine, the cutting is done more efficiently, and the various parts required to be most prominent are shown much clearer, the piece also has a smarter and more finished look, and its value is, consequently, enhanced. There is, too, a decided saving in time and labour. The cutting motion is of an improved construction, and very simple, and possesses the great advantage that it can be stopped or set in motion as required whilst the machine is in operation. Another improvement is in connection with the tightening or brake rollers, which are arranged so that the attendant can, by turning the handles, bring almost any degree of pressure to bear the cloth against the brushes without moving from the side on which he attends to the machine. This improved apparatus, worked in conjunction with the patent combined crabbing, winding-on, and boiling machine, and the full-width washing and scouring machine, will be found of the greatest utility to manufacturers of worsteds and fancy cloths generally, as it is guaranteed that with them almost any degree of lustre may be regulated on the cloth, and creases, clouded ends, and such like drawbacks, reduced to a minimum. Messrs. J. Stead and Co. will gladly furnish further information and prices on application, and also of other kinds of machinery, of which they are makers, and to which we may refer in future numbers of our Journal, but we may name their single and double cropping and shearing machines, which can work in combination with the brushing and steaming mill. These cropping machines are of improved and varied construction, and so adapted as to meet the requirements of manufacturers of woollen, worsted, silk, linen, and cotton fabrics, they are guaranteed to do their work in an expeditious and economical manner, and, at the same time, to do it efficiently. Messrs. Stead and Co. are also makers of patent drying and tentering machines, raising gigs, dewing and damping machines, hydro-extractors, napping mills, etc., particulars of any of which can be had on application.

### A Machine for Weighing off, Automatically, an Exact Amount of Yarn.

The object of the machine is to weigh off rapidly, and with precision, an exact predetermined amount of yarn, and to wind it into balls, or otherwise, into the form in which it is to be sold. It consists essentially of a pair of scales, an apparatus for feeding the yarn on to the scale pan, an apparatus for stopping this feed at the proper time, and a machine for winding the measured amount of yarn into a ball or any other desired form. The yarn is placed in skeins, as it comes from the spinning machine, on to two reels or rollers above the machine. The thread passes loosely

between a pair of smooth jaws like those of a vice, thence, between a roller and an idle pulley resting on it, and, finally, into a light cylindrical box of tin, which is the scale pan of the weighing scales. By means of a chain gearing and a large wheel, this roller is turned rapidly, by hand or by other power, and pulls the thread of yarn off the skein and into the box as long as the idle pulley rests against the roller. The tin box into which the yarn is thus fed is on one arm of a pair of scales, on the other arm of which is placed the required weight. On the weighted end of the scales, there is a wire dipping into a mercury cup, thereby keeping an electrical circuit, from a battery or small dynamo, closed, as long as there is not the required amount of yarn on the pan. In this circuit, there is a powerful electro-magnet, the armature of which is secured by levers to the idle pulley and vice jaws described above. As soon as the yarn, which is being fed on to the scale pan, is sufficient to counterbalance the weight on the other arm of the scales, the tilting of the scale beam opens the electric circuit at the mercury cup, and, thereby, relieves the armature of the magnet, which in turn raises the idle pulley from the feed roller, thereby stopping the feed and closing the vice jaws, which then hold the thread securely at the required point. An empty scale pan is then put in place of the one which is full, and while the second quantity is thus being weighed off, the first is simultaneously wound into a ball by a single winding apparatus attached to, and operated by, the same machine. The success of the machine seems to be due to the fact that the weighing and the winding are not one and the same, but are two successive operations. The precision with which the yarn can thus be weighed depends evidently only on the sensitiveness of the balance used. Instead of opening a circuit when the required weight is reached, the apparatus might be arranged to close a circuit, thus economizing the current. But the latter would have the disadvantage that, should the current from any cause fail, it would not render itself evident, as in the reverse arrangement, in which, if the current fails, it stops the feed.

### McMurdo's Jacquard Card-Repeating Machine.

Makers of appliances for the weaving of what are generally termed fancy or figured fabrics have recently been vying with each other in introducing improved features into their various apparatus, which improvements, during the last two or three years, have been rather numerous, and our readers will have noticed that the descriptions of some of these jacquard mechanisms have occupied no small space in our pages, especially during the past four months. Former notices are now supplemented by a recital of a few of the leading features of a jacquard card-repeating machine made by Mr. McMurdo, a well known manufacturer of jacquard apparatus, and whose works we have recently visited at New Street, Miles Platting, Manchester. There are features in this machine, which, in the duplicating of cards, are all that can be desired, and a trial of the apparatus will convince users of the great saving of labour and time ensured by its adoption, and, consequently, of its value in an economical point of view. It is not our purpose to compare this mechanism with others that have formerly been described, as our readers will be quite able to judge for themselves as to their relative merits. The annexed illustration gives a good view of the repeater. A stationary punch plate is securely mounted in the machine, and, above this, is a sliding frame which carries the punches properly secured therein. A comb locks these up or down as needed. The sliding frame is lowered, by means of eccentrics upon one of the shafts, when the punches are required to cut the card, and is raised again to its former position when the operation has been performed, where it waits ready for the next card to be brought upon the plate. The cards pass over the cylinders of the punching machine on their passage through the cylinders, being operated in a manner similar to those of the jacquard attachment itself, and thus readily change the cards after being punched. The jacquard machine is mounted immediately above the punches, to one of which each hook is connected by what may be termed a compound connecting wire. These are formed of a pair of wires, each having an eyelet at one end; the end of each wire is put through the eyelet of the other, whilst a spiral spring, being placed upon them between the two eyelets, keeps these apart, and thus forms a spring connection between the jacquard hook and the punch, which does not become slack. The locking comb is constructed in the usual manner, but the rods upon which it slides are held in position by spiral springs, and are actuated by oscillating levers, which are provided with slots to permit the vertical movement of the frame which carries the punches. These levers are bell-cranked, and are operated from the cams on the shaft before mentioned. In working, the jacquard hooks are lifted by the "griffe", and raise their corresponding punches, which are then, along with the other punches left down, locked in their respective positions by the comb. The revolution of the shaft carrying the eccentrics then draws down the punches to the card which is already upon the fixed punch-plate. The raised punches make no impression upon the card, but the others punch holes into them; and as there are as many rows of punches as there are rows of holes to be punched in the card which is being repeated, a whole card is punched at one revolution of the shaft. The operation being finished, the eccentrics raise the punches from the card, which automatically moves forward, bringing a fresh card upon the plate, when the operation proceeds as before. Of course, it will be obvious that the first set of cards must be cut in the ordinary way, from the design, by the piano-machine. These are then laced together, and are used in the jacquard to actuate the repeater, which then automatically reproduces a set of cards exactly according to the pattern. The machine is an exceedingly ingenious adaptation of the jacquard principle to card punching. It easily cuts 40 cards per minute, and may be made to do more. It thus effects a very great economy where many cards are used. Indeed, this is so great

that, in a few months, we understand, it will pay for itself in the saving effected from the methods that have been generally in use. It is made in two sizes, to cut a 400, or a 600, card. The larger will, of course, cut both, the excess punches being lifted out of action in the latter case. In conjunction with this repeater, Mr. McMurdo has constructed a small machine for the purpose of cutting the peg and lace holes in the blank cards. It is self-acting and, in working, takes the cards through on a chain of plates, during which they are punched. This apparatus requires only a boy to feed it. Both these machines are simple in mechanism, and work admirably, and, we have no doubt, our readers will see much merit in them. Mr. McMurdo will give further particulars and prices on application.

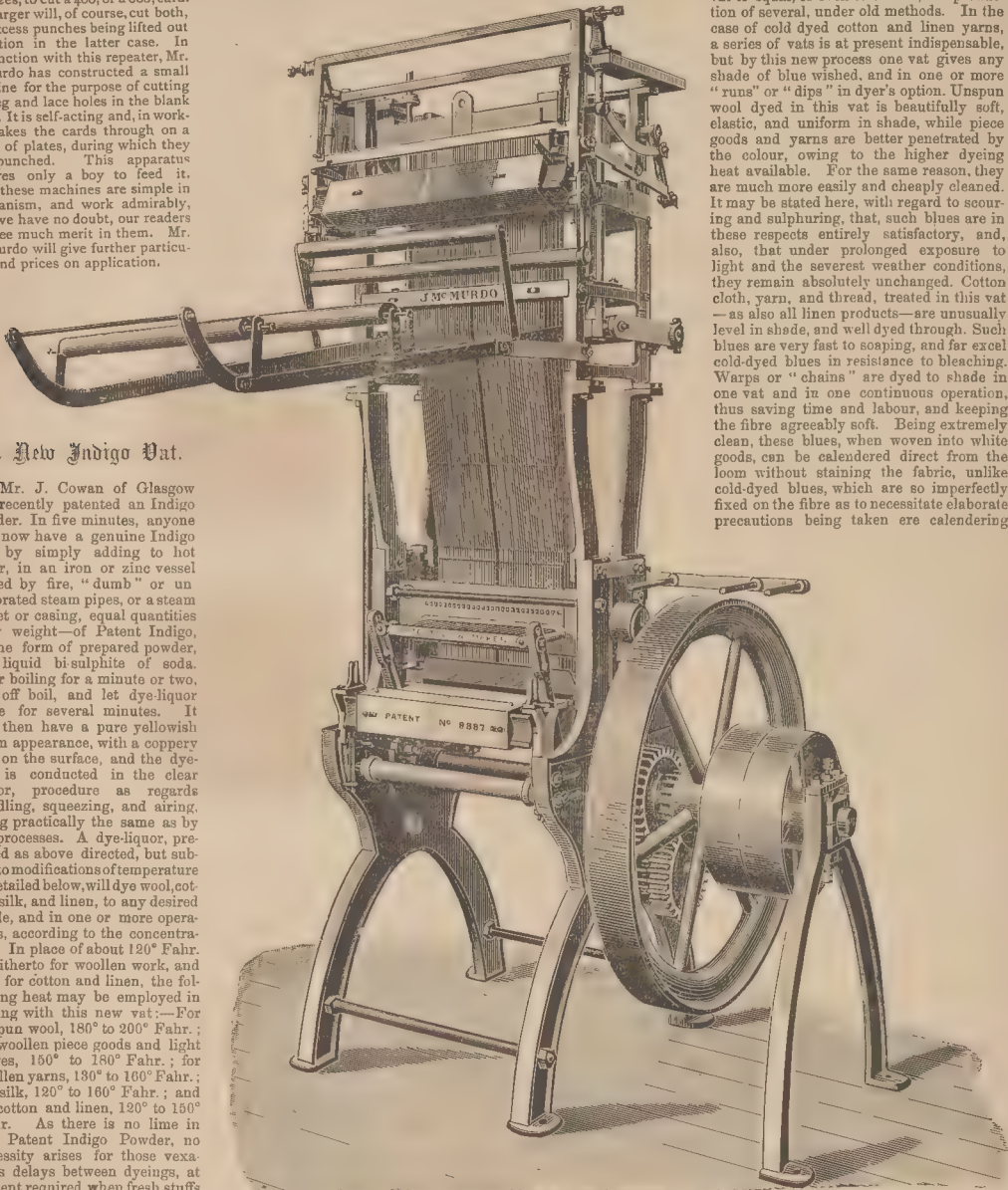
great economy in plant—and consequently in space—is effected by the use of this patent indigo, as its power of continuous dyeing enables one

vat to equal, or even to exceed, the production of several, under old methods. In the case of cold dyed cotton and linen yarns, a series of vats is at present indispensable, but by this new process one vat gives any shade of blue wished, and in one or more "runs" or "dips" in dyer's option. Unspun wool dyed in this vat is beautifully soft, elastic, and uniform in shade, while piece goods and yarns are better penetrated by the colour, owing to the higher dyeing heat available. For the same reason, they are much more easily and cheaply cleaned. It may be stated here, with regard to scouring and sulphuring, that, such blues are in these respects entirely satisfactory, and, also, that under prolonged exposure to light and the severest weather conditions, they remain absolutely unchanged. Cotton cloth, yarn, and thread, treated in this vat—as also all linen products—are unusually level in shade, and well dyed through. Such blues are very fast to soaping, and far excel cold-dyed blues in resistance to bleaching. Warps or "chains" are dyed to shade in one vat and in one continuous operation, thus saving time and labour, and keeping the fibre agreeably soft. Being extremely clean, these blues, when woven into white goods, can be calendered direct from the loom without staining the fabric, unlike cold-dyed blues, which are so imperfectly fixed on the fibre as to necessitate elaborate precautions being taken ere calendering

### A New Indigo Vat.

Mr. J. Cowan of Glasgow has recently patented an Indigo Powder. In five minutes, anyone may now have a genuine Indigo vat, by simply adding to hot water, in an iron or zinc vessel heated by fire, "dumb" or unperforated steam pipes, or a steam jacket or casing, equal quantities—by weight—of Patent Indigo, in the form of prepared powder, and liquid bi-sulphite of soda. After boiling for a minute or two, put off boil, and let dye-liquor settle for several minutes. It will then have a pure yellowish green appearance, with a coppery film on the surface, and the dyeing is conducted in the clear liquor, procedure as regards handling, squeezing, and airing, being practically the same as by old processes. A dye-liquor, prepared as above directed, but subject to modifications of temperature as detailed below, will dye wool, cotton, silk, and linen, to any desired shade, and in one or more operations, according to the concentration. In place of about 120° Fahr. as hitherto for woollen work, and cold for cotton and linen, the following heat may be employed in dyeing with this new vat:—For unspun wool, 180° to 200° Fahr.; for woollen piece goods and light serges, 180° to 180° Fahr.; for woollen yarns, 130° to 160° Fahr.; for silk, 120° to 160° Fahr.; and for cotton and linen, 120° to 150° Fahr. As there is no lime in this Patent Indigo Powder, no necessity arises for those vexatious delays between dyeings, at present required when fresh stuffs are added, five minutes sufficing with this new vat for the dye-liquor to clear, after fresh indigo and bi-sulphite have been stirred in. In large dyeworks, such stuff may be conveniently added to the vat as required, from a stock kept ready boiled up in a separate boiler, and prepared as instructed above, but in a concentrated form. This arrangement allows the vat liquor to be kept at the heat suited to the class of work in hand. It follows, therefore, that the total absence of lime from this new vat, permits of continuous dyeing in it, the importance of which fact will be at once apparent. In dyeworks where a large daily output is imperative,

can proceed, to protect goods into which they are woven from being soiled during the process. Fast greens of all shades for shipment are also readily obtained in this vat. When prepared as a paste, it will be found that the patent indigo powder may be used for printing calico, or other tissues and fibres, either by block or cylinder, and in conjunction with colours for "steaming styles." These indigo prints stand the strongest steaming and soaping, without blurring or "running" in the slightest degree on the fabric, which requires no preparation beyond



McMurdo's Jacquard Card Repeating Machine.



that given for steaming colours. Pure indigo blues, dyed in this new vat, give the genuine indigo re-action with nitric acid, and stand all "government" or other usual tests, whether acid or alkaline. The customary "bottomings" and "toppings" used for indigo work on wool, woollen goods, cotton, and linen, may all be employed with this patent indigo.

### A New Machine for Silk Winding.

The new machine for winding silk which was shown at the Paris Exposition owes its invention to the ingenuity of a representative of a French silk firm. This gentleman, while at Scutari, watching the departure of camels loaded with spools of silk for Tcheran, was struck with the proportion in weight of silk to spools, the latter being 75 per cent. of the load, while the loss of camels on the journey was 10 per cent. Upon thinking over the matter, he decided that the silk should be wound without making it square, or causing it to kink; that the spools for commerce and the reels for the sewing machine should be done away with, and a wound silk or thread, of equable strength, suitable for hand or machine use, be provided for the worker. The "Star Disk," in which silk is wound on twelve bobbins at the same time, is the admirable device which has been evolved. It is made in all sizes adapted to the requirements of the trade.

### Improvement in Power Looms for Weaving Velvet.

A French patent has been taken out for the above. The improvements consist in a device for working the healds. Instead of having cams of different forms, arranged as usual on an ordinary shaft, according as wanted, a single drum is used, and on this, at required points, segments cut in a uniform manner at both extremities are brought—the only difference between them being the length of the circumference they occupy on the drum. The drum is channelled with circular grooves, into which the segments adjust, and in which they are fastened by small bolts. The holes receiving these are arranged on the drum at irregular intervals, each corresponding to a passage of the tram. A second improvement relates to the knife, which, in the double looms, may separate the two tissues by cutting the nap which unites them. The knife, mounted on a runner, which is transverse to the loom, is generally worked by a string passing on return pulleys, and the ends of which are attached to one of the two necks of the pulley; this latter has a circular and to and fro movement which is sufficient to make the knife pass from one side to the other of the loom. This to and fro motion is obtained by means of a cam acting on a slide, this latter acting in turn on a pinion which transmits its alternate motion to the pulley.

### Decorticating Machines for Ramie.

To the Editors of the Journal of Fabrics and Textile Industries.

Gentlemen,—The subject of decorticating and ungumming vegetable fibres is of such universal importance that you are doing a great public service by opening your columns to its discussion. While agreeing with Captain Doty that, in the treatment of fibres, such as ramie, hemp, flax, &c., in which the fibrous is cemented to the liguorous portion of the stem, and the separate fibres cemented to each other, decorticating machinery alone is never likely to be other than "a clumsy expedient," I am far from thinking that there is no place for machinery in the operation, and that, in the nineteenth century, it is necessary to have recourse to the crude hand labour methods of our remotest ancestors. Rather do I think that the solution of the problem is to be found in a combination of mechanical and chemical methods. Mr. Dezwarde, an eminent French chemist, has discovered such a process, by which he claims to be able to decorticate and degum ramie, &c., in any quantity, without injury to the fibre, in about two hours, and he has forwarded to me beautiful specimens of various fibres treated by his process, and prepared as substitutes for silk, cotton, woollen, &c. M. Hermant, C.E., Professeur et Chef des Travaux Chimiques à l'Institut Industriel du Nord, has tested this process, and certified that the cost of treating 100 kilogrammes of ramie will be from 6 to 8 francs, and, if treated on a large scale, much less; that the time required for decorticating is about one hour, and for degumming about the same length of time; that the process is not only very practical and economical, but must be a great success, and that the materials thus prepared can be spun on flax machinery, dry or wet (cold). These certificates are in my possession, and can be seen by any one interested in the subject. When results such as these can be obtained by the judicious combination of simple bruising machinery and cheap chemical baths, it is absurd to suppose that hand labour, producing per man 2 lb. of fibre per day ("Chisholm's Handbook of Commercial Geography," 1889, page 139), can continue to be employed. The ramie field of the future will, undoubtedly, resemble the sugar cane field of to-day, light tram lines serving to carry the stems to the central dépôt for treatment in the cheapest and most expeditious manner.

I am, Gentlemen,

Yours obediently,

JOHN RONALD SHEARER.

11, Queen Victoria-street, London, E.C.  
February 19th, 1890.

### An Indian Trading Train.

It is proposed to run a special train from Calcutta, at an early date to be agreed upon by a majority of those subscribing. This train will consist of 30 cars of the East Indian Railway, each to contain the goods and samples of any firms who desire to push their business in the North-West Provinces. In order to counteract the influence of Bombay, the train will stop at all large stations on the line, remaining for two days at the larger stations, and one day at the smaller ones; at less important stations it would stop a few hours only. The time occupied in running the train and halting at stations would amount to about 21 days. Firms dealing direct with the public may send two European assistants in charge of each car to effect sales at the railway station. It is recommended that those firms whose system of business is of a wholesale nature send two assistants likewise, one to remain in charge of the car, and the other to canvass among the local dealers. Mr. Stuart, who put forward this scheme, is an officer of an Indian railway, who has obtained leave of absence.

### Commercial Failures.

According to *Kemp's Mercantile Gazette*, the number of failures in England and Wales gazetted during the four weeks ending Saturday, February 22nd, was 351. The number in the corresponding four weeks of last year was 370, showing a decrease of 19, being a net decrease in 1890, to date, of 55. In addition to these gazetted failures, there were 281 Deeds of Arrangement filed at the Bills of Sale Office during the same four weeks. The number filed in the corresponding four weeks of last year was 292, showing a decrease of 11, being a net decrease in 1890, to date, of 41. The number of Bills of Sale published in England and Wales for the four weeks ending Saturday, February 22nd, was 714. The number in the corresponding four weeks of last year was 937, showing a decrease of 223, being a net decrease in 1890, to date, of 336. The number published in Ireland for the same four weeks was 20. The number in the corresponding four weeks of last year was 45, showing a decrease of 25, being a net decrease in 1890, to date, of 26.

### Black on Cotton.

The *Faerberi-Muster Zeitung* publishes a number of recipes for dyeing black on cotton, and we give them in abbreviated form. All of them are for 25 kg. yarn:—1. A cheap black, fast against washing.—Boil the yarn for 2 hours in 1½ kg. (3 lbs. 4½ oz.) solution of logwood extract, let it remain in for 1 hour, wring out, place in a mordanting bath of 500 grammes (17½ ozs.) sulphate of copper and 75 grammes (1,175 grains) chromide of potash, draw about 6 times, and wring out. Enter the yarn in the first bath, which has been filled up with water, and to which 1 kg. (2 lbs. 3½ oz.) 90 per cent. soda has been added. After 15 minutes, wring out the yarn, enter again into the sulphate of copper bath, to which 1 kg. sulphate of iron has been previously added, then return again into the soda bath, in which finish. 2. Deep black fast against washing.—As specified above, boil the yarn in the solution of logwood extract, then wring out feebly, place on sticks, and blacken in a milk of lime bath—1 kg. slaked lime, draw about 5 times, wring out quickly, chrome in 500 grammes chromide of potash, and 500 grammes sulphate of copper solution, 140° F., draw about 6 times, wring out and brighten with a little oil and soap. In order to obtain good results, it is necessary to pass quickly from the milk of lime bath into the chromide bath. 3. Fine blue black.—Dye similar as in recipe No. 2, but add to the logwood extract bath 250 grammes (about 9 oz.) quercitron extract. After dyeing, brighten with 250 gr. rape oil, wring out, let the yarn remain covered up overnight, and dry next day, by which a much nicer and deeper black is obtained than by drying immediately after the brightening, as the rape oil operates better upon the copper mordant. With black, No. 3, the dyer may also dry immediately after placing on sticks, after which he may chrome, whereby the lime bath is dispensed with. 4. Blue black for velvet manufacture.—8 kg. (17 lbs. 10 oz.) logwood chips are boiled out, and the yarn is drawn for about one hour in this decoction. Wring out, dry partially, oxidize with 500 grammes sulphate of copper, and 25 grammes chromide of potash; draw about in it six times, put back into the logwood bath, to which has been added 1 kg. of 90 per cent. soda and ½ kg. castile soap, which has been emulsified with 250 grammes rape oil. The yarn remains in this bath until all the logwood has been extracted, and is then drawn through water containing a little soap. Do not dry too warm. 5. Deep black for affetas.—This is dyed similarly as in recipe No. 4, except that the decoction of 1 kg. quercitron bark has been added to the bath. Oxidize with 100 grammes (3½ oz.) chromide of potash, and 500 grammes sulphate of copper. When ready, the yarn is wrung out and covered upon sticks. Let the yarn hang overnight, and the next day take through a bath containing a little logwood decoction, soap, and oil, and do not dry too hot. 6. Black for umbrella cloth with indigo substitute.—The yarn is previously boiled, washed, and wrung out. It is then entered overnight in a decoction of 10 kg. (22 lbs.) sumac, after which it is wrung out, entered in a fresh bath with ½ kg. (17½ oz.) lime, in which it is quickly drawn about five times, and then wrung out. It is at once placed lukewarm into 10 litres (21 pints) pyrolignite of iron (black or iron liquor), in which it is left for one-half hour, then well aired, steeped for 1 hour in water, and wrung out. The yarn, which must already have a nice black gray bottom, enters next into a bath of 50° C. (122° F.), which contains 1½ kg. (3 lbs. 4½ oz.) indigo substitute (blue tinge). After 1 hour's dyeing, the bath is exhausted. Wring out evenly, give a warm soap bath, which contains about 500 gr. oil, for 15 minutes, then wring out and dry.

## New Patterns for Ladies' and Gentlemen's wear, for Spring and Summer Seasons, 1891.

Since the spring and summer seasons of last year, there has been no very striking change in demand for any new cloth, unless the recent advance in the call for serges may be termed such, and as there has, during the past few months, been a decided run in their favour, which, judging by reports, is likely to continue for some time, the first place must be given to this class of cloth. Serge cloths, whether for ladies' or gentlemen's wear, have invariably been produced, until the past two or three years, in rather plain styles, very little of the fancy element having been introduced, and the colourings have, as a rule, leaned to a sombre hue, but, lately, this has been in a great measure altered, and the tendency now is to more elaborate weaves, and brighter effects as regards colour. Some of the new patterns we now have on hand are excellent specimens of this class of fabric in design, colour, and finish. The designs are principally in large checks, the grounds being in dark blues and slates, and the check effects in ribs of contrasting colours, but still such as harmonize with the ground work. Others have their effects heightened by various combinations of fancy yarns. These, however, are mostly adapted for fabrics for ladies' wear. Of course, it is well known that serges generally are made mostly from the rougher classes of yarns, not necessarily rough as regards quality, but rather as regards the manner in which they are spun; although there are quantities woven of very fine yarn, still the tendency is greatly to the rougher kinds. These are not well adapted for trousersings, but they are very often sold for suitings, and the general run of the patterns for the seasons above mentioned are, as a rule, specially adapted for coatings and mantle cloths, and such a large demand has been experienced recently for the former, that the worsted coating trade has been greatly affected and the demand has fallen off largely, and, in consequence, manufacturers are now turning their attention to the production of serges. In the new patterns for the best qualities of worsted, some very effective cloths have been produced. In style, the tendency is still for pronounced stripes for trousersings, in which silk effects are again very prominent, although, in many cases, the place of silk has been taken by coloured yarns that stand out strikingly from the rest of the pattern. For coatings, checks—both large and small—will be in favour, the former, perhaps, to a rather less extent than usual, being rendered decided by large ribbed overchecks. The same applies for suitings. In the very thin cloths for hot climates, the check will mostly have the advantage, and these are in very bright colourings. In the medium qualities, there is little change to note, especially in coatings, as the call for serges has been the means of fewer new patterns being produced than has been the case for some seasons past. In trousersings, there is a similarity between the best and medium qualities as regards designs, &c. In the lower kinds, amongst which may be named union cloths, some new effects have been introduced, which, of course, follow the ideas of the better qualities of two or three seasons back. Makers of union cloths know that it is rather a difficult matter to follow the lines of the best class of worsteds, as so few of them lend themselves readily to the cotton warp, still some very neat patterns can be produced effectively with these warps from the patterns now before us. In woollens, there has again been a decided advance on the designs of twelve months ago. There is much less of the stripe and more of the check and mixture tendency for next season's goods. The striped effects are decidedly less bold, being in most cases narrower, and fancy yarns are shown rather prominently in their composition, mostly in the ground-work, the sides of the stripes being invariably in colouring having a marked contrast to the body of the fabric. In checks, the majority of patterns are in yarns of a mixture or mottled character, in rather bright colourings, and this applies especially to cloths of a fine quality adapted for wear in hot climates. Other patterns do not show much change from last season. To the medium qualities of both tweeds and Cheviots, the description given applies in a great measure. In the lower makes, adapted for the ready-made clothing trade, there are some new and effective departures, fancy yarns being utilised more prominently than usual, the patterns being such as ought to find a ready market. There is little to note in any department of what may be termed plain goods, either in worsteds or woollens, the tendency being, in nearly all branches, to fancy designs and colourings. In manulings, large patterns, or rather large repeats, will take the lead in stripes, checks, and figured designs; as regards the last named, a run seems lately to have been on patterns having figures or flowers, where these could be woven on looms with or without the jacquard. Recently, a few woollen manufacturers have turned their attention to the using of the jacquard, and, invariably, with success, as larger patterns have been required than could be woven by hands. Still, with the latter, some very neat figures have been produced, and many manufacturers have lately taken to registering their designs. This has been done through our Patent Agency at a cost not exceeding ten shillings for each pattern. By doing this, they prevent the cloth being brought out by any other manufacturer. Producers of both worsted and woollen goods, who follow the lines of the above description of next season's patterns will not go far wrong. These can be had from our office, as usual, at £2 per 100 samples, and, in ordering, it is requested that a few cuttings of the cloth generally made should be sent us, as this enables us to select the patterns best adapted for the class of fabrics to be manufactured.



### Personal and Trade Notes.

Mr. Thomas Kershaw, cotton manufacturer, Sun Mill, Mosesgate, Bolton, died on February 7th, at the age of 58.

Messrs. Varley Bros., Limited, have been registered to carry on the business of dyers and finishers, at Fieldhurst Mills, Stansfield, Halifax.

Mr. C. W. Whitman, who has been for over twenty years United States Consular Agent at Huddersfield, died at his residence, Bradley Lane, on February 15th.

Mr. Thomas Mason, manufacturer of dress goods, Colne, died on February 20th, aged 67. Mr. Mason was a county magistrate, and was a large employer of labour.

Mr. John Butler, proprietor of the Alexandra Spinning Mill, died on February 27th, at his residence, Bolton, after a long illness. The deceased gentleman was in his 58th year.

Mr. Robert Barber, The Tang, Romiley, Stockport, who died on February 9th, at the age of 45, was a manufacturer at Hatherlow Mills, Romiley, and a Justice of the Peace.

Messrs. William Fletcher and Sons, Wellbank Mills, Little Lever, near Bolton, are commencing to run Springside Mill, which has remained empty since it was built some years ago.

Messrs. Fairfax, Kelly and Sons, Heckmondwike, have advertised their business for sale. The firm are old established manufacturers of carpets, blankets, &c., having been in existence over a century.

The firm of Robert Walker and Co., Hyde, has been registered as a Limited Company, with a capital of £50,000 in £5 shares, to carry on the business of cotton spinners at the Providence Mill, Hyde.

A company has been registered under the name of R. and T. Clayton, with a capital of £10,000, in £100 shares, to carry on the business of cotton spinners and manufacturers, at Rishton, near Blackburn.

Summerville Mills, Oldham, which we mentioned recently, have been taken over by a limited company, with a capital of £112,500, in £5 shares. The mills had been run by the executors of the late Mr. Wm. Chadwick, J.P.

The prospectus has been issued of the Scotch Tweed Manufacturing Society, Selkirk. The mill will be worked on the co-operative principle, and the shares are to be £1 each. The amount of the share capital is not stated.

The firm of Sharp Murray, Limited, has been registered with a capital of £20,000, in £10 shares, to take over the business of manufacturers of cotton goods, bleachers, and dyers, carried on at the Park Mills, Bradford, Manchester.

Messrs. T. F. Firth and Sons, Limited, Heckmondwike, have issued their first annual report, which shows over £20,500 profit, allowing a dividend of 8 per cent. to be paid. The dividend on preference shares is 5 per cent., and 5,000 is carried to the reserve fund, and a considerable amount to next account.

Mr. Jonathan Mellor, of the firm of J. and J. J. Mellor, Limited, cotton spinners and manufacturers, Warth Mills, near Bury, died at his residence, Fairlawn, Lytham, on February 9th, aged 72 years. The deceased was largely interested in railways, was a brother-in-law of Sir Edward Watkin, and a magistrate of the county of Lancaster.

A Limited Company has been registered with a capital of £30,000 in £10 shares, to acquire the business of Henry Lister and Sons, Brow Mills, Huddersfield, and Ford Mills, Horbury, silk, woollen, and worsted spinners. Each director has 200 shares. These are H. Lister and H. R. Lister, managing directors, and A. E. Lister, J. Lane, and W. Blackburn.

On another page, we give particulars of a new vegetable raw material, introduced by the New Textile Syndicate, Limited, Copthall Buildings, London, E.C., and Popeley Mills, Gomersal, near Leeds. We also give a special supplement consisting of several specimens of the raw material, and also of yarns and cloths made from them, to which we draw special attention.

Mr. Joseph Brierley, manufacturer, Bridge Street Mill, head of the firm of Jonathan Brierley and Son, Slaitwaite, died on March 4th, at the early age of 44 years. Mr. Brierley commenced his career at Bank Gate Mill. In 1876, he built Bridge Street Mill, and subsequently the large shed adjoining. Mr. Brierley has been chairman of the Local Board and Burial Board, and a director of the Slaitwaite Spinning Company, Gas Company, and Globe Worsted Spinning Company.

The Victoria Mill Company at Clayton-le-Moors has been registered as a limited liability concern, to carry on the business of cotton spinning and manufacturing. The firm of John Whittaker and Son, Padiham, carrying on the same class of business, has also been turned into a limited company. The capital is £10,000, in £100 shares. The subscribers are Messrs. J. and J. H. Whittaker, Misses P. and E. J. Whittaker, Padiham; Mrs. B. Brooks, Knutsford; Mrs. T. R. Bertwistle, and Mrs. T. P. Walmsley, Bury.

An electric incandescent lamp, in the shape of a candle, has been brought out by the Edison Swan Electric Light Company, 14, St. Ann's Square, Manchester. The bulb, in this case, is made cylindrical, and of opal or frosted glass, so as to resemble a wax taper. The carbon filament which emits the light, when heated by the current, is in the shape of a "flamboyant spiral," so that, when incandescent, it has the appearance of flame. This company are specially qualified to undertake all work in connection with the electric lighting of mills, bleachworks, dyeworks, etc.



## PATENTS.

## Applications for Letters Patent.

Artificial silk from liquid. Le Vicomte Hilaire de Chardonnnet, London.	30th Jan.	1,656
Attaching ends of pieces of cloth. F. Leeming and W. J. Monk, Halifax.	18th Feb.	2,599
Belting (fabrics). J. P. Maddox, Manchester.	28th Jan.	1,446
Belt fastener. R. J. P. Spence and R. Storrar.	29th Jan.	1,548
Bobbin (machine). I. Seville and A. Leach, Manchester.	7th Feb.	2,036
Baling cotton, wool, &c. R. Davidson, London.	12th Feb.	2,304
Bobbins or spools of shuttles. W. Hothersall, London.	19th Feb.	2,714
Cloth or fabric. C. Mackay, London.	28th Jan.	1,456
Cloth feeding to sewing machines. C. O. Muller and E. M. Bach, London.	28th Jan.	1,488
Cloth marking and cutting tables. I. Reens and A. L. Singer.	28th Jan.	1,505
Cleaning and extracting oil and grease from cotton waste, &c. B. D. Barnett, London.	30th Jan.	1,652
Colouring matters (brown). T. R. Shillito, London.	31st Jan.	1,688
Colouring matters (induline series) soluble in water. O. Imray, London.	31st Jan.	1,699
Colouring matters (yellow dye). T. R. Shillito, London.	1st Feb.	1,771
Colouring matters (yellow basic). O. Imray, London.	3rd Feb.	1,808
Colouring matters. R. Holliday, London.	3rd Feb. 1,811 & 1,812	
Cutting cloth, &c. F. E. D. Acland, London.	3rd Feb.	1,818
Colouring matters for dyeing, &c. B. Wilcox, London.	3rd Feb.	1,828
Colouring matters (soluble blue). J. Imray, London.	4th Feb.	1,874
Condensing woollen, cotton, &c. B. Booth and J. Beaumont, Huddersfield.	6th Feb.	1,968
Carding engines. H. Monie and S. M. Rutnagur, Manchester.	11th Feb.	2,183
Carding engine flats. J. and W. A. Entwistle, Manchester.	11th Feb.	2,184
Combing machine. L. Allart, London.	12th Feb.	2,301
Clipping appliances for textile fabrics. Sir James Farmer, Manchester.	18th Feb.	2,004
Drying or extracting moisture from fibres and fibrous materials. J. B. and E. Whiteley, Halifax.	28th Jan.	1,462
Dyeing machines. G. H. Craven, London.	31st Jan.	1,702
Dyeing textile fibres. R. Holliday, London.	3rd Feb.	1,813
Dyestuffs (yellow). A. Bang, Leeds.	6th Feb.	1,962
Dyeing with indigo. I. Braithwaite, Liverpool.	11th Feb.	2,195
Driving bands or ropes and connections. Messrs. Kenyon, Manchester.	13th Feb.	2,318
Dyeing fabrics, &c. J. Koenigswerther, London.	13th Feb.	2,381
Dyeing cotton. T. Ingham, Manchester.	14th Feb.	2,411
Drawing, roving, and spinning rollers. J. Hall, Bradford.	14th Feb.	2,414
Dye-stuff (soluble blue cotton). H. H. Lake, London.	15th Feb.	2,499
Dyeing on bobbins. W. L. Wise, London.	20th Feb.	2,763
Dobbies. F. Leeming and R. Wilkinson, Halifax.	21st Feb.	2,800
Dyeing in hanks (machinery for). J. E. Dyson, Huddersfield.	21st Feb.	2,837
Engines (rotary). J. Longworth, Denton.	29th Jan.	1,606
Flax-spinning machines. L. MacLaine and W. J. Fraser, Killyleagh.	27th Jan.	1,389
Flyer bobbins. T. Critchley, London.	27th Jan.	1,406
Fixed or vibrating tenter hooks to frames. B. Shaw, Huddersfield.	30th Jan.	1,610
Fluted textile fabrics. A. G. Speight, Liverpool.	17th Feb.	2,537
Fire alarms. H. H. Lake, London.	18th Feb.	2,644
Fabrics (woollen, felted, textile, &c.) C. A. Whipple, London.	19th Feb.	2,707
Gassing or singeing yarn. J. B. Ellison, Bradford.	5th Feb.	1,919
Garments (ladies' underwear). E. Kaiser, Holborn.	21st Feb.	2,836
Carpets (Scotch or ingrain). J. S. Cooke and J. W. Brook, Halifax.	18th Feb.	2,616
Condensers (woollen). W. Cliffe, Huddersfield.	20th Feb.	2,736
Jacquards. W. Hardaker, Bradford.	8th Feb.	2,672
Jacquards (double lift). C. H. Dracup, Bradford.	8th Feb.	2,081
Jacquards. F. and A. Mortimer and W. Wright, Gomersal.	21st Feb.	2,807
Knitted ribbed fabrics. W. Wilkins, Leicester.	29th Jan.	1,540
Knitted loop or pile fabrics. J. Booth, Halifax.	4th Feb.	1,864
Knitting machines (circular). J. and W. Hearth and W. H. Willis, London.	8th Feb.	2,086
Knitted goods—Cardigan jackets. J. H. Cooper and J. A. and A. Corah, London.	8th Feb.	2,090
Knitted goods. S. Davis and F. Moore, London.	13th Feb.	2,365

Knitted articles. C. E. Thomson and A. S. Rogers, London.	22nd Feb.	2,903
Looms. T. Mason, London.	27th Jan.	1,387
Looms. S. Turner, London.	27th Jan.	1,436
Loom picking box and shedding motion. J. H. Kirk, London.	5th Feb.	1,916
Looms. J. and R. Lindsay, Glasgow.	5th Feb.	1,916
Lacing jacquard cards. R. Reid, J. Fisher, and J. Parkinson, Glasgow.	6th Feb.	2,096
Looms. S. Fox, Liverpool.	10th Feb.	2,121
Lace, &c. L. Lindley, London.	11th Feb.	2,222
Looms. J. Ainsworth, London.	12th Feb.	2,316
Looms (certain classes). J. H. Fernie, Manchester.	13th Feb.	2,373
Looms. J. and S. Hoggate, Clayton-le-Moors.	18th Feb.	2,589
Mordanting and dyeing fibres, and extracting animal matter from vegetable fibre. J. and I. and J. Smith, Halifax.	30th Jan.	1,607
Mules and twiners (self-acting). J. T. Ainsworth, Manchester.	31st Jan.	1,664
Operating dabbing brushes of combing machines. J. R. Hoyle and B. Shackleton, Bradford.	28th Jan.	1,459
Printing patterns by blocks. A. E. and T. F. Apsey, Bristol.	27th Jan.	1,372
Preventing the stretching or breaking of roving. W. P. Thompson, Liverpool.	27th Jan.	1,405
Presses for baling, &c., cotton, &c. W. M. Wilson, Manchester.	30th Jan.	1,611
Pattern and fabric combined. S. Guitermann, London.	3rd Feb.	1,825
Picking bands to pickers (connecting). S. and J. W. Clegg and P. Townsend, Ashton-under-Lyne.	4th Feb.	1,846
Printing, &c., on selvages, lists, &c. F. F. Abbey, Huddersfield.	4th Feb.	1,855
Picking motion. J. and A. Moss, Halifax.	18th Feb.	2,582
Rolling or packing cotton, wool and apparatus. G. F. Eyre, Manchester.	22nd Feb.	2,848
Spindles and method of driving. J. Jucker, London.	27th Jan.	1,400
Shuttle thrower for power looms. J. N. Weber and F. Schubert, London.	27th Jan.	1,408
Scouring or washing wools, &c. J. and I. and J. Smith, Halifax.	28th Jan.	1,461
Spinning frames (apparatus used in). S. Dyer, Belfast.	8th Feb.	2,062
Shuttle-guard. R. Schofield, W. Haslam and G. Hargreaves, Manchester.	8th Feb.	2,066
Spinning frames. J. McFerran and J. B. Pirrie, Carrickfergus.	10th Feb.	2,111
Spinning frames. J. V. Eves, Manchester.	14th Feb.	2,489
Spinning and doubling (ring). S. H. Brooks and F. Barlow, Manchester.	18th Feb.	2,614
Spinning flax, &c., on pirns or cops. A. Wilson, Belfast.	19th Feb.	2,676
Sectional warping and beaming machines. J. H. Stott, Manchester.	22nd Feb.	2,849
Scutching machines. J. B. Black, Ballymena.	22nd Feb.	2,863
Shearing (cloth) machinery. E. Gessner, London.	22nd Feb.	2,867
Twisting and doubling yarns. J. Farrar, Halifax.	10th Feb.	2,127
Transit frames for pile fabrics. A. Bancroft, Manchester.	19th Feb.	2,762
Treatment of textile fabrics. A. J. Boulton, London.	21st Feb.	2,827
Treatment of esparto grass, &c. E. Applegarth, London.	21st Feb.	2,832
Wet thread stop motion for looms. W. and T. Mattock, London.	29th Jan.	1,585
Wet fork motions of looms. J. E. Stephenson, Halifax.	30th Jan.	1,608
Waterproof fabrics (ornamental). J. Markies, Manchester.	6th Feb.	1,972
Washing and drying machines. E. D. Reeve, London.	11th Feb.	2,306
Warp beaming machines. J. Sunderland, London.	13th Feb.	2,315
Winding mechanism of twiners. T. and J. T. Tetlow and J. Taylor, Manchester.	17th Feb.	2,514
Woven fabric. G. E. Stead, Manchester.	20th Feb.	2,737

## Patents Scaled.

16,581	18,740	18,868	18,904	18,930	629	700	871
922	988	1,008	1,052	1,121	1,212	1,226	1,258
1,433	1,501	1,702	4,275	8,326	12,956	16,043	16,279
16,395	17,574	18,949	544	1,289	1,295	1,373	1,453
1,491	1,552	1,848	2,336	7,045	13,127	70	1,759
2,177	2,290	2,807	2,387	1,499	2,534	2,755	8,206
8,585	12,944	17,897	673	1,758	1,790	1,847	1,857
1,933	2,268	2,432	2,136	2,571	2,619	2,635	2,641
2,988	4,584	6,691	12,428	14,161	16,698	17,835	18,164

# The Journal of Fabrics AND Textile Industries.

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## Notices.

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## On the Treatment of Cards.

(From the *Centralblatt für die Textil-Industrie*.)

It frequently happens that the heads of carding departments express widely divergent opinions upon matters of vital importance, even so far as to take opposite views of the same subject, especially in regard to the treatment of cards and card clothing. One lays down the rule that wooden cylinders are the best, another prefers iron, and a third, perhaps, insists that a plaster of Paris covering underneath the clothing is absolutely essential for a good card. As regards the durability of the material used in making the card, it is certainly the duty of the manufacturer to employ only the best material, and he is responsible for any defects which may afterwards appear in this respect. The next point of difference in opinion has reference to the kind of material used, and here custom has great influence in determining the preference of the expert carder. If a carder has had a long experience with wooden cylinders, for example, he has doubtless acquired a certain amount of skill in treating them, and would naturally prefer this material to either iron or plaster of Paris. The objection sometimes even urged that, with correct treatment, the clothing on iron cylinders is more exposed to rusting than that on wood or plaster of Paris, is not founded on fact. To prevent this, it is only necessary to grease the iron cylinder well with tallow (a process, by the way, which is also advisable for the other two kinds of cylinders), no matter whether it be a worsted, woollen, or cotton card. The principal object is to provide a layer of fat underneath the wire to protect it against the influences of humidity in the carding room. When this precaution is not taken, the teeth will rust and break out of their foundation. Leather cards are best greased with tallow, which is to be warmed previously, so that it will soak in well. Vegetable fats, such as

cotton and linseed oils, should be avoided if possible, and mineral oil also is to be avoided under all circumstances, as it makes the leather stiff and brittle, causing the wire to lose its elasticity and the teeth to break out. It is absolutely necessary that all cards, before mounting, should be stored for a few days in a warm, dry, room, for the purpose of increasing the strength and elasticity of the glued joints, which are present in every leather card. If the card is mounted immediately on being received, and, especially, if it has been exposed to humidity during transit, these joints are soft and easily loosened when tension is applied. Leather, India-rubber, and similar kinds of foundations are more elastic when warm, and require less weight or other mechanical power to stretch them. While speaking of mounting, it is perhaps well to mention another point, namely, that of the correct mounting of the cards in general. It is of the greatest importance, with respect to durability, not to stretch the card fillet too tight or to leave it too loose. If stretched too tight, it will tear at the cemented joints, the tooth hooks will spread out, making them higher, and requiring a longer grinding to obtain a smooth and uniform surface. Even then, the cylinder will not always work satisfactorily. In the same manner, a slack mounting of the card clothing has its defects, one of which is that the ends of the fillet at the edges of the cylinder become too long, in consequence of which they are ground too much, if great care is not taken, and another stretching will become necessary in time. Several of the defects become more pronounced, if, in the mounting, the edges of the fillet are crowded too close together. Edge must lie on edge, side by side, without being forced together. The undue crowding of the fillet deprives it of its necessary room for action, and it will invariably stretch either on becoming warm or in the course of the work. In this case, one or two things will happen, either one edge will crowd over the adjoining one, or the fillet will rise and bulge out, and both are equally serious in their influence upon the durability of the cards, which must then be ground for a longer time, and this does not in any way result in their improvement, as they become worn out before their time. Another thing is that the least carelessness will result in the surface being pressed down either in grinding or in stripping, and it is impossible, with pressed down teeth, to accurately regulate a carding engine. It will never do its work satisfactorily, and the best thing to do in such a case is to take off the card clothing, which has become rough, and replace it with new, for the former will always make trouble, as it will not open and lay the fibres parallel, but will tear them. In mounting previously ground cards, which are always preferable under all circumstances, from three to four hours will suffice for grinding them so that they are ready for work. The greasing of the cylinder with tallow must be done carefully, distributing the tallow evenly. If there are uneven places, these, of course, will raise up the cards correspondingly, and so much will have to be ground off. Complaints are often made that certain cards make too much waste, which, with clean and correctly washed wool, should not occur, but, on close inspection, the fault will invariably be found to be due to a want of care in mounting. The carder who mounts his cards carefully and correctly will most assuredly have less cause to complain of waste than one who does not care whether or not the edges vary from four to eighteen millimetres at the place of joining. Another defect is that of the irregular working of the fancy. It is universally asserted that it crowds the wool towards the middle of the engine, a circumstance which, in a wool spinning mill, becomes noticeable from the fact that the roving from the centre becomes thicker. This is caused by the air current created by the fancy and cylinder, but its direction depends upon the style of mounting and grinding of the cards. When a carder has a carding engine standing isolated, he can easily satisfy himself whether the staple thrown out by the fancy flies towards the middle of the engine or falls more or less upon the cards. The mischief, too, will increase in magnitude if the cards have not been carefully ground. Although the grinding need not be done at each cleaning of the cards, it is necessary to have it done at certain times in order to keep them sharp and in good condition. By drawing the grinding apparatus to and fro, whether it is a frame with emery cloth or a simple stick with emery, the cylinder is necessarily worn off at both ends. In the course of time, this makes the cylinder clothing higher in the middle, and, though this elevation may be apparently insignificant, the fancy will operate more towards the middle, and, consequently, will throw out the waste from this place. This defect can only be corrected by gradual and careful grinding, either with a good grinding roller or, what is still better, a rotating grinding apparatus. Should this, however, not remedy the fault, the fancy clothing should be very slightly loosened at the centre. Every carder knows that cleaning is of the utmost importance both with regard to the satisfactory operation and the durability of the cards. Cleaning too often is injurious, not only because it wears on the cards, but also because much wool is lost and time spent. Again, although it may be easy to work in such a way that little cleaning is needed, it is not always advisable to do so, because the cleaning will thus become quite a difficult matter, and the cards must, consequently, suffer. It is, therefore, of the greatest importance in a carding room, to judiciously regulate this operation. When using stripping cards, they must be proportioned exactly to the cards which are to be stripped, because, if either too fine or too coarse, the teeth of the latter will be forcibly moved by every draw, and, on account of the frequent forward and return movements, the teeth will become loose, tip over forward, and break out, and this, of course, interferes with the proper working of the card.



## Gigging.

(Continued from Page 28.)

The melton finish is another which is often desired. This is an effect which is not unlike velvet in feel, and more or less like it also in appearance. Here we cannot clear our thread out as in the first-mentioned finish, nor can we produce a long straight nap as in the second, but the aim must be to approach more or less the appearance and finish of the velvet. In case our goods are woven of slack twist, we may give four pieces two hours' work on old work, with about the same grade of tussels in both cylinders and with the cloth touching both just the same; but, if the fabric has fulled long, and has considerable felt, then it will be best to use more than one grade of tussels. In finishing a worsted, we must not have too much fulling. Slow work on the gigs at first is absolutely necessary, raising the nap only on the old work, then gigging one way. Put a few slats of a higher grade of tussels in the finishing cylinder before completing the work. In this finish, a greater degree of lustre will be attainable the more the fabric is worked the one way. Use a fine tassel, or the goods are apt to be streaked when finished. In gigging heavy weight goods, such as beavers, heavy broadcloths, etc., it is a good plan to crop the nap on a cropping shear before the gigging is complete. This gives the finishing cylinder a much better chance to work clear to the bottom, and thus thickens up the nap. Do not crop too close, however, as there is a danger of causing the face of the goods to look open and gray when finished. In the subject of gigging, there are many points on which it is impossible to give any rules excepting those of the most general character. As to the time, number of runs, change of slats, and kinds of work, we cannot, from the nature of the case, give very explicit directions. Where the gigger is in doubt, he must leave all to the good judgment of the finisher, and trust to his skill and experience to bring about the desired results. All the points mentioned above are dependent upon various considerations, such as the kind of stock the piece contains, how long it has been fulled, the weight and condition of the cloth, and the peculiar finish desired, and the finisher must have regard to all these when he has his piece at the gigs ready for that step in the operation. To ascertain when a piece has had sufficient gigging, take the fabric firmly over the fingers of one hand, and with thumb nail part the nap; then, if the threads look clear and show up full and round, we may be sure that the piece is nearly done. Another way is to insert a knife blade, or a large needle, under the nap. If it enters freely, you will be able to tell, after a little practice, just what condition the goods are in. The general feel and appearance are more or less of a guide, but not quite so reliable as the others before mentioned. The fabric should be soft and pliable, and the nap should be smooth and straight. There are difficulties at the gigs as well as at every other point in the finishing process. One of these is the trouble which arises from gigging too dry. Any piece of goods which is treated thus will be sure to feel dry and harsh after it is finished. It is, indeed, quite possible that it is here that the dry feeling is produced which is so often laid to the use of a soda soap in scouring and fulling, or to too much soda ash in conjunction with the soap. The use of the moistening gig will prevent this difficulty. Or, if such a gig is not at hand, sprinkle the piece evenly and regularly from a perforated pipe while the goods are being rolled up. This water finish is not by any means an undesirable effect, and the fabric is pretty sure to give satisfaction when it is complete. When a piece of cloth is thus treated, it will not be so apt to catch lint, nor will there be either roughness of nap, or dry, harsh, feeling when all is finished. Before closing this paper, we should not forget to say a few words about the use of gig flocks. The gig flocks should be kept separate from the other waste, and the white should be kept together in one place. Run the gig flocks through a waste card. This will remove the tussels and dirt, and put it into such a shape that it can be used in some kinds of yarn, in case we do not care to grind it up for flocks.—*Boston Journal of Commerce.*

## Burr Dyeing—Carbonization of Vegetable Impurities in Wool.

There remains for our consideration the last of the important operations of wet finishing, namely, burr dyeing. We have already gone fully into the scouring, fulling, gigging, and steam finishing, all that remains is the above mentioned subject and the extracting, before the piece again undergoes the processes of dry finishing. The burr dyeing is, indeed, on some special classes of fabrics, a most important operation, and we must not pass it over without giving it the consideration which it justly merits. In the woollen fabric, as we have it from the looms, there are two very different classes of foreign and obnoxious materials which take the shape of imperfections. These materials are natural to the wool in its raw state, and, however carefully the wool may have been picked and carded, there are still some small portions of these foreign matters which will make their appearance in spite of all that can be done to bring about their removal in the ordinary way. The impurities which are commonly found mixed with the wool in its raw state are almost exclusively of a vegetable and fibrous nature. Beside these, there is also a small proportion of earthy matters, and some traces of decomposed animal products. But of all these impurities, by far the

most important and the most abundant are those which partake of a vegetable nature. These impurities are of several kinds. In the first place there are the burrs. These are quite abundant, and the smallest of them are not only difficult to remove but are, in fact, almost entirely inseparable from some grades of stock. In the second place, there are the fragments of straw and grass, which are far less difficult to deal with; and, thirdly, there are, usually, some slight traces of raw textile fibres, such as jute; then, fourthly, there are fragments of leaves and herbaceous skins; and, last of all, there is the drug, which forms the greater portion of the impurities contained in raw wool, known as cuticular cellulose, a vegetable substance made up almost entirely of pure wood. These, then, are the chief impurities which exist in the wool when it is in its raw state, and it is the means of removing these, or, at least, of concealing their existence, which demands the attention of the finisher in this last process of wet finishing, where they have not already been done away with in the previous processes of manufacture. Not only the finisher suffers from the presence of these substances in raw wool but, even more so, do his predecessors in the art of manufacture, and every man who is connected with a manufacturing establishment knows very well what unspeakable annoyances are connected with the preparation and manufacture of very dirty wool. Indeed, so common and so universal are the complaints from all sides regarding this matter that it seems as though some satisfactory means should be arrived at before very long of doing away with it completely. There is, indeed, no one thing to which so much trouble is due, in the whole branch of manufacturing woollen goods. These foreign matters—burrs, seeds, fragments of leaves, and animal particles, are the constant causes of damage to cards, of breakages in spinning, and of loss and delay all along the line. Even the weaver is called upon among all the rest to suffer too. On account of weak places in the yarn caused by burrs, the filling cannot be beaten up so well, and the warp threads are weak, too, for a similar reason; they break oftener, and, consequently, necessitate slow and unprofitable work on the looms. In fact, in evenness, in durability, and in all that goes to make up a perfect piece of goods, the cloth is deficient and unsatisfactory, and even after such stock is woven into cloth, and has gone through the finisher's hands, the fabric is far from being perfect, and must be gone over by hand with burling irons and nippers before it is at all fit to send to the consumer. This course not only adds to the cost of manufacture, but, more than this, after all is done, the goods are not really perfect, and cannot be absolutely free from pine burrs and seeds. And now, before treating specially of burr dyeing, we should like to make a few remarks on this subject, which, although it does not actually come ordinarily within the finisher's domain, is so intimately connected with his successful work that we cannot wholly pass it by. The subject of the cleansing of the raw wool is no part of the finisher's work, and yet it has such an important bearing upon the value and the appearance of the finished fabric that no one who wishes to get the best results in his line should be ignorant of the best and safest methods of procedure in this—the first of all the processes of woollen manufacture. This brings up the topic of carbonization of wool. This method of removing the impurities above enumerated has been in practice for some time among manufacturers in England and France, and we are inclined to believe that it is gradually but surely growing more and more into favour on this side the sea as well. However, it is a fact which cannot be denied that the men who are engaged in woollen manufacture in the countries above named are far more particular in this part of the process than are we in the western world. Indeed, in France and in England, so extensive has this work of cleansing raw and impure wool of all foreign materials become that there are large and independent establishments devoted especially to this part of the industry alone. But we think we are not far astray when we prophesy that the time is not very far distant when we shall be quite up to the age in this, as we are already in so many other branches of the textile industries. The mere phrase, carbonization of wool, is rather misleading, and is in great measure incorrect. It is not by any means the wool which is carbonized, but it is the impure and foreign materials which have no place in the fabric, and which, when they are present, are only there to detract from its usefulness and its value. The treatment at this step varies somewhat with the real condition of the wool that is to be used. In case this stock is very impure, that is, if these foreign materials are present in great abundance, the carbonization process is undergone before the carding takes place, but when the stock is such that the great majority of the impurities may be removed in the picking, dusting, and carding, then the carbonization is not done until the fabric is ready for the fulling mills. Here we have only the smaller particles of these substances to deal with, which could not be removed in the ordinary way, and which, nevertheless, are often so abundant as to destroy the good appearance of the finished cloth. The process of wool carbonization is by no means difficult or even complex. It consists, merely, in the complete reduction of all the vegetable matters to a charcoal dust. This dust, then, is afterwards removed quite easily, and with no damage whatever either to the fibre or to the fabric. In order to accomplish this reduction, sulphuric acid, from 4° to 6° B is used, while, at the same time, the wool itself is kept exposed to a high temperature. All foreign matters, particularly those of a vegetable and fibrous nature, are at once completely charred, and are easily removable by passing the whole through rollers, and dusting during the operation. There are other methods still in use, but they are more complicated than this, and only accomplish in the end the same results. What the

reason can be why this plan of wool carbonization is not more universally adopted is more than we can tell. Surely it cannot be that it is considered worthless or impracticable, as it is practised with so much success abroad that such an argument against its use cannot possibly be upheld.—*Boston Journal of Commerce.*

### Dyeing Black and Bordeaux Red on Woollen Yarn.

The following recipes are taken from the *Farber und Zeugdrucker Zeitung*:—Black can be produced in various ways, either by means of dye woods or tar colours. Direct black for 10 kg. [22 lb.] woollen yarn. —Dye in one bath with 1 kg. 2 lb. 3½ oz. logwood extract, 500 grams. [17½ oz.] sulphate of iron, 300 grams. [10½ oz.] sulphate of copper, and 100 grams. [3½ oz.] saccharic acid. Boil the dyestuff, enter the yarn, handle for 1½ hour at 95° C. [203° F.] This black is a so-called quick black, and cheap. The only objection is that the iron makes the yarn somewhat hard. A softer black, which, however, is slightly dearer, is obtained by mordanting with chrome. Logwood blue black on 10 kg. woollen yarn, fast against fulling and acids.—Mordant with 300 grams. [10½ oz.] bichromate of potash, 200 grams. 7½ oz. sulphate of iron, and 300 grams. sulphuric acid. Boil for 1½ hour and whizz. Next day, dye in a new bath with 1½ kg. logwood extract. Enter in the cold bath, gradually raise to boiling, and handle for 1½ hour at the boiling point. If the colour is desired still fuller, add to the dye bath another 30 or 50 grams. [463 to 771 grains] sulphate of copper. Tar colour black on woollen yarn [10 kg.].—The well moistened yarn is dyed in one bath with 750 grams. [26½ oz.] Glauber's salt, 350 grams. [12½ grains], sulphuric acid, 600 grams. [21½ oz.] brilliant black B., 200 grams. naphthol yellow S, 200 grams. light green S F. Handle for one hour at 95° C. Enter the yarn at a low temperature. The style of production of this black is simple, and the colour is nice, but is not as fast against fulling as chrome black. In place of brilliant black, naphthol black (Casella and Co.), or wool black (Actien-Gesell. f. Anilinf.) may be used.

#### FAST BORDEAUX ON WOOLLEN YARN.

Bordeaux on woollen yarn can be produced in several ways, with ordinary tar colours, cochineal, or alizarine dyes. Bordeaux on 10 kg. woollen yarn.—The well-moistened yarn is dyed in one bath with 100 grams. fast red (B. A. & S. F.), 500 grams. Glauber's salt, and 500 grams. sulphuric acid. Handle at 90° C. [194° F.] for 45 minutes. Enter at 20° C. [68° F.], heat gradually, add 50 grams. [771 grains] fast red A, and 25 grams. indigo carmine. Boil for 30 minutes. If the shade is desired more yellow, add a little azo yellow, or some other yellow acid dyestuff. In place of fast red, ponceau or azo-rubin may be used. Cochineal Bordeaux on 10 kg. woollen yarn.—The following colour is fast both against light and acid. Dye in one bath with 600 grams. saccharic acid, 400 grams. tin salt, and 2 kg. cochineal. Boil for 45 minutes, wash. Top in a new bath with 3 kg. archil extract, draw for about 2 hours at 60° C. [140° F.]. The archil bath is not exhausted, but can be kept for further use. The colour is to be dyed in tin kettles, as those of copper make it dull. The latter is a very handsome colour, and fast against light, but is much clearer than tar colours. Alizarine Bordeaux red on 10 kg. woollen yarn.—This colour is fast against light, fulling, and acids. Mordant with 300 grams. chromate of soda and 200 grams. tartar. Boil for 1½ hour. Rinse the mordanted yarn lightly. Dye in a new bath with 15 per cent. alizarine red W R, 20 per cent. paste, (B. A. & S. F.). Treat cold for 30 minutes, handle at 95° C. for 2 hours. Add to 1,000 litres [264.17 gallons] water, 1 litre [1 quart] acetic acid, 7° B. strong. If a bluish Bordeaux is desired, take the brand W B. The dye may work in copper kettles. This colour is dear, but it is very fast and pure. The cheapest and most simple Bordeaux, however, is decidedly that of the fast red, ponceau, azo-rubin, etc.

### Recipes for Dyeing Jute Yarns.

In the following recipes for dyeing jute, unless otherwise expressed, the quantities of dyestuffs are for 50 kg. [110½ lb.] of material. The dyestuffs are fixed with great facility on jute, as it naturally contains tannin. In other words, it is as if already mordanted with tannin, and the basic dyestuffs, therefore, are fixed without it. In the course of time, however, the colour dyed on jute changes somewhat, and, in this respect, improvements are still very necessary, especially when aniline dyes have been used. **ROSE**.—Mordant at 50° C. [122° F.] with red liquor (aluminum acetate), 6° B.; dye at the same temperature, in a fresh bath, with safranin. **YELLOW**.—Mordant with aluminum acetate, 2° B., and dye in a fresh bath, with equal parts chrysoidine and phosphine; add the dyestuff gradually in small quantities, until the desired shade is obtained. **BLUE**.—Heat the bath to 40° C. [104° F.] and add 500 grams. [17½ oz.] alum, 100 grams. [3½ oz.] soda, 50 grams. tartar emetic, as mordant; finish dyeing with cotton blue. **SCARLET**.—Mordant, hand warm, for one hour with red liquor, 3° B., and add 500 grams. tin crystals. **MORE GREEN**.—Place in the bath 3 parts yonic fustic decoction, and 1 part logwood decoction; heat to 50° C., enter the jute, draw about ten times, take out and add 4 grams. [62 grains] vitriol, 4 grams [62 grains] blue-stone; again enter the jute, draw about to shade and wash; top at 30° C. [86° F.] with Vesuvine or Bismarck brown and a little methylene blue.

### The Firing of Nitrogenous Colouring Matter on Vegetable Fibres.

(From the Saint Denis Society of Colouring Matters and Chemical Products).

Nitrogenous colouring matters, both simple and complex, only possess a very slight affinity for vegetable fibres. Up to the present time, nitrogenous colouring matters have been almost the only ones in use, but they have, nevertheless, been employed in an artificial manner by combining them with sodium carbonate, sodium chloride, sodium phosphate, &c. The new process employs them directly, after first subjecting the cotton to a preliminary process, which renders it capable of being directly dyed by nitrogenous colours. A quantity of the tissue—say a hundred yards—is passed through a bath composed of magnesium acetate at 30° B, 50 litres; aluminum acetate at 15° B, 50 litres; water, 50 litres. After drying, the material is passed into sulphate of zinc, 5 kilogrammes; caustic soda, 10 kilogrammes; water, 100 kilogrammes. On leaving the vat, the stuff is washed, and then passed into the dyeing bath, made up to a strength of 2 or 4 per cent. The temperature of the bath should be about 80°, and the dyeing should not last longer than half an hour. The various shades of frounceau and rocoulin, almost all the oranges, the Bordeaux, cerosina, the cruceins, and the homologous benzidine colours can thus be well fixed on the cloth. The recipe given above may be varied according to circumstances. The substitution of the corresponding sulphates for the acetates of aluminum and magnesia is advantageous economically, and does not appreciably affect the results. The solution would then be made up in the following manner:—Magnesium sulphate, 15 kilogrammes; alum, 5 kilogrammes; water, 100 litres. In addition to this change, calcium acetate may take the place of magnesium acetate, &c., &c.—*Monteur de la Teinture.*

### Commercial Failures.

According to *Kemp's Mercantile Gazette*, the number of failures in England and Wales gazetted during the five weeks ending Saturday, March 29th, was 434. The number in the corresponding five weeks of last year was 576, showing a decrease of 142, being a net decrease in 1890, to date, of 197. In addition to these gazetted failures, there were 394 Deeds of Arrangement filed at the Bills of Sale Office during the same five weeks. The number filed in the corresponding five weeks of last year was 370, showing an increase of 24, being a net decrease in 1890, to date, of 17. The number of Bills of Sale published in England and Wales for the five weeks ending Saturday, March 29th, was 1,041. The number in the corresponding five weeks of last year was 1,135, showing a decrease of 94, being a net decrease in 1890, to date, of 430. The number published in Ireland for the same five weeks was 35. The number in the corresponding five weeks of last year was 46, showing a decrease of 11, being a net decrease in 1890, to date, of 37.

### Tariff Changes and Customs.

**SPAIN**:—A communication has been received from the Foreign Office, transmitting a translation of a Royal Spanish order, dated the 31st December, respecting the duties on jute yarns in Spain. It has been ordered 1st. That jute, when twisted into one sole thread, the thickness of which may be equal to, or less than, No. 1 of the English numeration, is to be considered yarn, and as cord when its thickness may exceed that number. 2nd. That in order to ascertain the number which is to be applied to jute yarn, a certain number of metres of the yarn be taken and multiplied by the factor 165 (the number of centigrammes which a metre of No. 1 jute yarn weighs) and the product divided by the number of centigrammes which the assayed metres of yarn may weigh, the quotient being the number of that yarn.

**UNITED STATES**:—The following decisions affecting the classification of articles in the Customs tariff and the application of the Customs law of the United States have recently been given by the United States Customs authorities:—Embroidered linen handkerchiefs are dutiable at the rate of 35 per cent. *ad valorem* under the provision in Schedule J. (T. I. 334) for handkerchiefs or other manufactures of flax . . . or of which flax . . . is the component material of chief value, not specially provided for in this Act. Goods known commercially as flannels made of a cotton and wool warp, with a woollen filling, are dutiable as flannels, at the rate of 24 cents. per pound, and 35 per cent. *ad valorem*.

#### Commercial Convention with the United Kingdom.

**EGYPT**:—According to the new commercial convention recently concluded with Egypt, the under-mentioned goods, the produce or manufacture of the United Kingdom of Great Britain and Ireland, shall pay, on importation into Egypt, duty not exceeding 10 per cent. *ad valorem*, viz.:—1. Metals, raw, partially manufactured, including machinery and parts thereof. 2. Yarns, threads, nets, velvets, and all other fabrics, plain, openwork, or fancy, unbleached, bleached, printed, or dyed, manufactured from any vegetable fibre, such as cotton, jute, flax, hemp, rehea, palm, aloe, or the like. 3. Yarns and fabrics as enumerated in Class 2



manufactured from wool, worsted, mohair, vienna, camel hair, or any animal fibre except silk. 4. Mixed fabrics of the materials enumerated in Classes 2 and 3, and also with an admixture of silk or waste silk not exceeding 20 per cent. in weight of the whole fabric. The duties *ad valorem* levied in Egypt on goods, the produce or manufacture of the United Kingdom of Great Britain and Ireland, shall be calculated on the value at the place of shipment or purchase of the object imported, with the addition of the cost of transport, including insurance, necessary for the importation into Egypt as far as the port of discharge.

VICTORIA:—The following is a statement of the rates of import duty now levied under the new Customs tariff of Victoria, dated the 4th November last:—

Classification of Articles.	Rates of Duty.
Articles of apparel being wholly or partly made up from materials containing wool, the duty on which is 30 per cent. <i>ad valorem</i> on importation	35 % <i>ad val.</i>
Apparel:—slops, clothing, underclothing, and articles of attire not otherwise enumerated, whether wholly or partly made up (except diving dresses, including the boots, gloves, and helmets for such dresses)	25 % <i>ad val.</i>
Handkerchiefs (except of cotton only), whether made up or in the piece	10 % <i>ad val.</i>
Do. (except of cotton or linen only), whether made up or in the piece	10 % <i>ad val.</i>
Hosiery (except of cotton, linen, and elastic silk stockings for surgical purposes or otherwise specified)	25 % <i>ad val.</i>
Quilts, sewn, cosies, and cushions	30 % <i>ad val.</i>
Silks (except hatters' silk plush, umbrella silk, silk for flour dressing, silk fags, oil silk, fringes, tassels and gimp for furniture, reps, damasks, and other material for covering furniture) in the piece, or piece goods containing silk, whether cut into lengths or shapes or not	20 % <i>ad val.</i>
Woollen manufactures, or manufactures containing wool (except printers' blankets), viz:—	
Blankets, blanketing, rugs, and rugging	25 % <i>ad val.</i>
Waterproof rugs and horse clothing	25 % <i>ad val.</i>
Woollen manufactures, or manufactures containing wool (except printers' blankets), viz:—	
Piece goods, whether in the piece or cut into lengths or shapes, being vestings, trouserings, coatings, shirtings, broadcloths, witneys, naps, flannels, mantle cloths, cloakings, ulsterings, kerseys, serges, costume cloths, melton cloths, and tweeds	30 % <i>ad val.</i>
The following articles are admitted free of duty:—	
Wool piece-goods, being collar check	
Machinery for carding, spinning, weaving, and finishing, the manufacture of fibrous material, and cards for such machinery.— <i>Board of Trade Journal.</i>	

### ODDS AND ENDS.

A patent law amendment bill is to be introduced into the German Reichstag, the main features of which are, according to the *Imperial Gazette*, the improvement in the method of examination, the continuance, with increased guarantees, of a patent once granted, and the reorganisation of the patent office.

Many of our readers may be interested in the fact that the Chinese are about to start cotton mills; there is one already in existence. In Bombay (India) cotton mills rise up quickly, there are at least 50 such factories in the town. Much of the manufactured article is sent to China, and this competes with English goods.

Speaking of France, it is curious to notice that while in woollen and cotton yarns from abroad her imports have materially declined, for cotton yarn and cotton goods they have largely increased. The French cotton trade is hampered by numerous petty restrictions, and for years there has been but little advance in the productive force of the weaving industry, and the demand on account of home production remains practically stagnant.

*Kuhlou's Gazette* says the fact that the grants to intelligent young men desirous of completing their commercial training in foreign lands are, in Germany, so few has recently again formed the subject of discussion. It is, with justice, stated that the outlay for such a purpose brings the richest returns, for, as our countrymen establish themselves in different parts of the world, their efforts naturally tend to promote German trade in the parts in which they are settled, and, even should they not remain abroad, the commercial and linguistic experience gained is of much value when they return home. Attention is drawn to the Neubauer Foundation, at Magdeburg, the proceeds of which go to Germans abroad who, by a report on the commercial conditions of their districts, may afford evidence of exceptional business capacity. Last year, a young clerk from Magdeburg, who had settled in the Panjab, carried off the prize.

The French Consul at Bombay reports that "the Government of the Presidency proposes to create, at Bombay, a Commercial and Industrial Museum, or permanent exhibition of native products, like the museums already existing in Germany. The object of this institution will be to make known to foreign merchants the goods they may procure in India."

The *Handels-Museum* for February states that the Hungarian Minister of Commerce has determined to enlarge and develop the Commercial Museum at Buda-Pesth, and to add to it a bureau in which merchants and others can apply for detailed information regarding Customs duties, expenses of transport, and other practical matters connected with trade.

The Belgian *Bulletin de Musée Commercial* for March announces that the first commercial museum established in the Mexican Republic has just been opened at Guadaluajara, in the State of Jalisco. It will contain specimens of all the natural and manufactured articles of a commercial value produced within the limits of that State, which is one of the most fertile in the republic.

The importation into Japan of different articles of wearing apparel has undergone a remarkable increase. This results, writes the Belgian *Chargé d'Affaires* at Yokohama, from the fashion which is spreading among the Japanese of wearing the European Costume. Wearing apparel entered, in 1885, to the value of 355,412 yens only, passing to 425,664 yens in 1886 and 878,425 yens in 1887.

According to a report received from Mr. A. de la Croix, British Vice-Consul at Bône, an industrial and commercial exhibition is to be opened there on the 15th May, and to remain open for a month. Mr. de la Croix is of opinion that British manufacturers might find in Algeria an important opening for their goods and agricultural machines, and adds that goods intended for exhibition may be addressed to him, and he will see that they are well placed in the British section.

The Belgian Consul at Lucca states in his report that the Milan Commercial Museum, formed on the plan of that at Brussels, has been in operation since the 10th June, 1886, and that it has rendered important services to Italian Industry. By means of sample collections made by Italian consuls, Italian Chambers of Commerce abroad, and special correspondents, the museum has been the means of bringing about business relations between Italian manufacturers and the most distant places. The Government, appreciating the services of the institution, has augmented its subsidy.

A bill, recently introduced into the Hungarian Diet, empowers the Government to grant facilities to all who start new industries in that country, or who establish factories for already existing industries on a larger scale than those at present in operation. The facilities which the Government will be able to grant will consist chiefly in exemption from nearly all taxes and rates for a period of fifteen years; the right of expropriation of the site required for any new establishment so as to make the venture independent of any ill-will on the part of the local authorities; and a remittance of the import duty on foreign machinery, tools, and building materials, and the carriage of the plant over the Hungarian State Railways for the cost of the transit only. The Government would welcome Englishmen experienced in the textile industries and other peculiarly English manufactures, who would build factories and take over skilled workmen capable of acting as instructors, and, later, as foremen to the native artisans.

In furtherance of Technical Education in Germany, the Berlin Municipal Weaving School will be opened this month. In the lower division, the instruction embraces designing and work on hand looms, knitting looms, and lace looms, theory of hand-weaving, designing, reckoning and book-keeping for factories. In the upper division, designing and work on power looms, the theory of power-loom weaving, including lace weaving; pattern drawing and designing, reckoning and the theory of the spinning machine are taught. The Oberschlema Pillow-lace School, which was established in 1850, and is under Government inspection, and receives a State subsidy, had, last year, forty female pupils, who principally make gipure and torchon laces and handkerchief edges. The Town Council of Plauen has voted 2,000 mks. to provide instruction for the Art Industry Technical Drawing School of that town, being double the amount granted last year.

A despatch has been received from the Secretary to the Colonial Government of Trinidad, enclosing an extract from the Customs regulations of the colony respecting commercial travellers. The following is a copy of the extract in question:—Commercial travellers may be allowed to clear as baggage such samples as are necessary for transacting their business, duty being paid on any part of them liable to duty. On the written application of commercial travellers, which is to be filed in the baggage warehouse when the cashier's receipt on it for the deposit is obtained, the landing waiter examining their baggage may, without reference to the collector, deliver goods liable to duty brought as samples on a deposit sufficient to cover the duty being made with the cashier, to be returned on the shipment of the goods, provided the amount of duty involved does not exceed £5. If it exceed that amount, the collector's authority must be obtained. Owners of such goods are to be warned that the deposit will only be returned on production of the tide surveyor's certificate of having seen the goods aboard, such certificate to be endorsed on the receipt for the deposit, which is to be retained by the cashier when the deposit is returned.

— 250 —

Ours was the first Journal in this country to give woven samples of various descriptions of fabrics regularly each month, and since we commenced this feature, some years ago, it has, to some extent, been adopted by others. In matters connected with every branch of designing, we stand ahead of all other Journals.

## No. 631.

	40 ends Slate, 2/48's worsted.	
2	" Twist,	} Four times.
2	" Slate, "	
2	" Twist, "	
2	" Slate, "	
	42	
2	" Twist,	} Four times.
2	" Slate, "	
2	" Twist, "	
2	" Slate, "	

Pegging Plan.

West :—2 picks Brown, 2/48's.  
2 " Twist, "

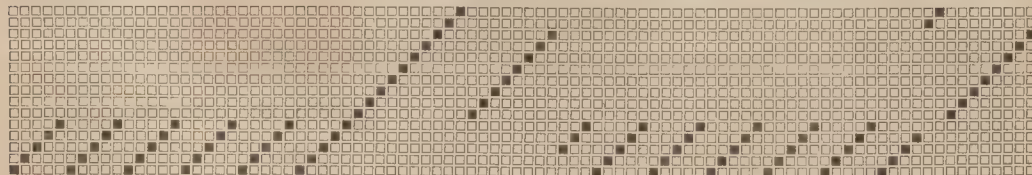
6,720 ends in warp; 104 ends per inch; 13's reed, 8 ends in a reed; 88 picks per inch; 64 inches wide in loom; 56 inches wide when finished. Weight 13½ ozs.



Repeat once.

Design.

Repeat once



Repeat once.

Draft.

Repeat once.

## No. 632.



Design.

### Pegging Plan



Draft.

4	Straw,	18
12	Mixture	18
3	Straw,	18

W<sup>est</sup> :—18's worsted knop yarn.

3,070 ends in warp; 48 ends per inch; 12's reed, 4 ends in a reed; 48 picks per inch; 64 inches wide in loom; 56 inches wide when finished. Weight  $7\frac{1}{2}$  ozs.

## No. 633.



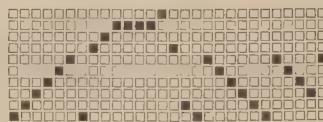
Repeat four times.

Design.

Repeat four,  
twice.



### Pegging Plan.



Repeat four times.

Draft.

Repeat three times

Warp:—28	ends Black, 2/32's	worsted.	4,600 ends in warp;
3	" Twist, 2/40's	"	72 ends per inch; 18's
4	" Black, 2/32's	"	reed, 4 ends in a reed:
3	" Twist, 2/40's	"	72 picks per inch; 64
9	" Black, 2/32's	"	inches wide in loom;
4	" Twist, 2/40's	"	56 inches wide when
9	" Black, 2/32's	"	finished.
3	" Twist, 2/40's	"	
4	" Black, 2/32's	"	Weight 16 ozs.
3	" Twist, 2/40's	"	

70 ends in pattern.

West:—2/30's worsted, all Black.

## No. 634.



Design.

Warp:—4 ends Slate Mixture, 16 skeins.  
 8 " Brown, "  
 8 " Slate Mixture, "  
 1 end Red and White Twist, 10 skeins.

16

3	"	Slate Mixture, "
10	"	Light Grey "
1	"	White and Yellow twist, 12 skeins.

19 picks in pattern.

1,408 ends in warp; 22 ends per inch;  $5\frac{1}{2}$  reed, 4 ends in a reed; 25 picks per inch; 64 inches wide in loom; 56 inches wide when finished. Weight, 12 ozs.

Attention is being directed to the utilising of the banana. From the stalk and leaf of this plant, it is stated, a beautiful silken fibre can be obtained, which, when manufactured into dress goods, closely resembles Irish poplin, the warp only, we presume, being from the banana plant.





## ORIGINAL DESIGNS.

On our first plate, we give a design for a Toilet Quilt, which will be found a useful one for this purpose.

On our second is one for a Mantle Cloth, which, if the figure is worked in one or two colours, will make an effective pattern. For an example—take a dark Indian red and a black upon a slate ground, or a fawn ground with slate figure would look well.

On our third plate is a Tapestry design, which will be found useful for a variety of other fabrics.

## MONTHLY TRADE REPORTS.

**WOOL.**—The quiet feeling pervading the wool markets during February has given place to a rather steadier tone, still, the purchases of wool are mostly for actual consumption, and there has been an absence of speculation. Users of English sorts have shown more disposition to buy, and this applies most particularly to those who use skin wools, these being taken at rather firmer rates than have ruled for the past few weeks. In fleece wool, a slight improvement has been noticed. Colonial wools have only had a moderate inquiry, but a more cheerful feeling has been noted in this class. Holders, where low offers have been made, have preferred to see the result of the opening of the next series of sales in London to selling at prices lately prevalent. The yarn trade has, perhaps, been a shade brighter, but spinners generally have appeared anxious for new contracts, still they have held out for firmer rates than was the case a month ago. Sales of Botany yarns have not improved, owing to the quiet condition of the coating and cashmere branches. For two-folds in mohair and knitting yarns, many enquiries have been made, and an improved business has been done. In the piece branches, a more hopeful feeling has appeared, as the recent fine weather has cleared stocks to a great extent, and merchants feel more at liberty to place new orders. The coating trade still remains very quiet, and there seems no immediate prospect of any improvement.

**COTTON.**—No marked change has taken place in this industry during the past month, and though the recorded results will not, as a rule, have exceeded production, values, and even quotations, for most staples have not displayed any material alteration. In the earlier part of the month, a fair trade was concluded, both in yarn and cloth, for numerous markets; but since then, for various reasons, the tone has been decidedly quieter, though, admitting a slight concession from ruling rates, considerable business has occasionally been possible. Margins are generally understood to be very attenuated both for spinner and manufacturer, so that, relief having been for the moment obtained, further transactions upon recent unsatisfactory calculations are again postponed to a more necessitous period. The sales of yarn to the Continent, Egypt, and some of the smaller foreign markets, are said to have been somewhat larger. Glasgow turkey-red yarns have kept steady in price. Two-fold yarns have been in fair request, principally in 32's and 42's for Japan. In fine counts for India, that is in the range from 70's to 100's, rather more trade has been done, but the rates have been excessively low. For the home trade, manufacturers bought rather freely in the first two weeks of the month, but, since then, have resumed their policy of cautiousness, more especially as the stoppage of looms, on account of scarcity of coal, whilst spindles were running, allowed an accumulation of yarn that gave them a slight advantage as regards delivery. American yarns have not varied much in value, though attempts to advance prices have frequently been made, not, as a rule, with success. In cloth, judging from the number of inquiries mentioned almost daily, there has been considerable inclination to purchase heavily, but, unfortunately, the limits have been so poor that a small proportion only of such inquiries have resulted in anything. For India, light goods have been sold somewhat freely, and the necessities of some makers of dhooties, jaconets, and mulls, have, at any rate, been relieved for a short time, apart from all questions of remunerative returns. Shirts for this market have been in poor request, and with few exceptions have offers been submitted that had the remotest chance of acceptance. The demand for China cloths has been fairly good, and special classes will have had quite an average time. Bleaching and finishing cloths have been wanted for various markets, and producers are engaged some distance ahead. Buyers for the home houses have kept up their assortments, and the prospects in this branch of our trade remain very encouraging.

**WOOLLEN.**—In most departments of the woollen industry, more vigour has been noted during the month, the exception being in districts occupied solely in the production of worsteds. The plainer descriptions of these have not met with much encouragement recently, for reasons given in our last month's report. The American tariff has disarranged business matters between Yorkshire and the United States, and, where orders have lately been taken, a reduction in price has had to be submitted to. Serges, as noted last month, are still meeting with much attention, and the demand has ruled large. In tweeds, Cheviots, and such like fabrics, satisfactory business continues to be done, and, although the coal strike put a stop suddenly to the giving out of many orders, still, after the settlement of the dispute, a more cheerful feeling pervaded the markets, and orders have since been booked fairly well, the prospects for the next few weeks for the woollen trade generally being particularly bright. The rapid advances made in the Leeds district in the ready-made clothing trade still continue, and at such a rate that, although new hands are being continually applied for, it is with extreme difficulty that they can be got in sufficient numbers to cope with the constantly increasing business. The heavy woollen trade has, lately, improved considerably, and in the neighbourhoods of Batley and Dewsbury business has, at present, a hopeful outlook. Prices generally have kept very firm, full time at the mills is the rule and, in many cases, overtime has been run.

**LINEN.**—There is but little change to note from our last report. Damasks and table linens have only sold moderately, either for the home or for the export trade, and the same may be said of fine drills of all descriptions. In the Barnsley district, many looms are idle, and, if we may note any difference, the production for the time of the year has been rather under the average. Stair carpetings, crash roller towellings, and such like goods, have shown a slight improvement, and the same may be said of bordered towellings, diapers, tea, glass, and other narrow fabrics for domestic purposes. Prices of nearly all classes are cut very fine, and where orders are to be had, competition for them is very keen.

**LACE.**—The lace trade has not generally improved, and were it not for some activity in the curtain department, the position of both employers and employed would be serious. A considerable amount of machinery remains idle, for the novelties which are freely produced in the millinery branch fall very flat. There is a slight improvement in the sale of Maltese goods, and point d'esprit fabrics, with pointed edges, meet with customers. Some kinds of trimmings, particularly Irish crochet edgings and American laces, are being bought. The curtain trade is in the most flourishing condition of any branch, despite strong competition. More curtain frames are running than at this time last year, and there is a slight advance in prices. Curtains are being purled, but are long the goods will be taped in the neater and cheaper style formerly in vogue. High-class silk guipures, both with scalloped and Vandyked edges, as well as the Fedora laces, are in considerable request, and some demand has been experienced for Escorial laces. Plain and bobbin nets are rather healthier.

## The New Vegetable Fibre.

In our last number, we gave particulars of a new vegetable fibre, and to show the value of the same, we issued a supplement containing over twenty specimens of the raw material with a similar number of specimens of yarn, as well as six specimens of cloth and felt. These comprised many colours of fine and coarse vegetable wool, in different colours, white, yellow, green, grey, pink, scarlet, &c. The yarns are of vegetable wool mixed with wool and shoddy, and also of vegetable wool unmixed, both of which were shown in a variety of shades. The cloths showed both plain and checked goods. One fault of new vegetable fibres hitherto has been their prohibitive price, but when the wool can be had, as in the present case, at from 4½d. to 6½d. per lb., and yarn at from 5d. to 6½d., it appears that, at last, something has really been done in the way of providing manufacturers with a new fibre of the greatest utility. That manufacturers take this view of the case is proved by the great interest which they have taken in the specimens we published in the supplement to which we allude. The New Textile Syndicate, Limited, who are manufacturing the fibre, have written to us, through their manager, stating that the supplement has been a very great success, and on a visit to the works of the Syndicate we found that enquiries and orders had poured in from manufacturers from all parts of the country. There are still many who have been unable, owing to the great interest taken in our last issue, to obtain this supplement, and we, therefore, have decided to re-publish it for the benefit only of those who did not procure it in March. The remarks we there made upon the fibre will be found on the first page of the supplement. By the way, this supplement appears to have interested competitive journalists as well as manufacturers, judging of the disappointment expressed concerning it by some. Our aim is always to keep away from the beaten track, and if others follow us as they have done in one or two important particulars, we have no desire to complain.

The number of power-looms engaged in the silk weaving of Southern France is 19,139, and of Northern France 849.

12TH APRIL, 1890.



TOILET QUILT.



April 12th, 1890.

THE JOURNAL OF FABRICS AND TEXTILE INDUSTRIES.

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THE JOURNAL OF FABRICS AND TEXTILE INDUSTRIES.

12TH APRIL, 1890.



MANTLE CLOTH.



THE JOURNAL OF FABRICS AND TEXTILE INDUSTRIES.

12TH APRIL, 1890



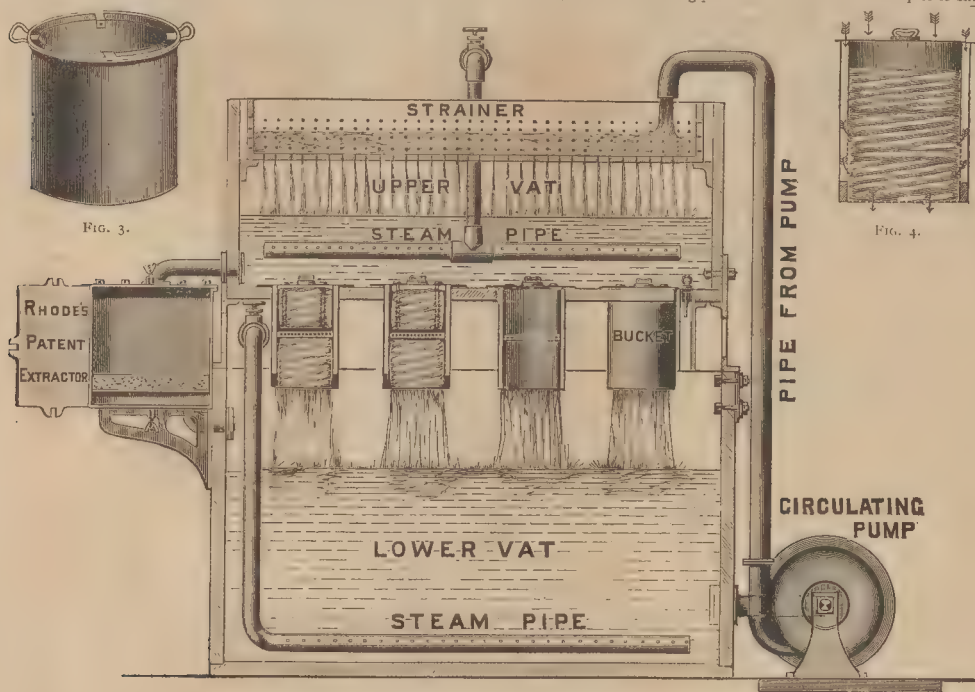
TAPESTRY.

## MACHINERY, &c.

### Gravitation Dyeing Machine, for either Combed or Carded Tops, or Wool in the Loose State.

Under the old system of dyeing wool, as it is well known, an open cast iron pan was in use, heated in the usual manner. The wool was placed in this pan and stirred by the aid of wooden poles, and thus a continued agitation of the fibre was the result. Such a method as this was allowed to be opposed to the principles of common sense by everyone interested in the subject. The matting and felting of the fibres resulting from the continual agitation, which brought other troubles in their wake, pointed to the requirement of some more rational method of dyeing tops and loose wool. Our readers may ask us the question—What do you consider a rational method of dyeing these materials? and our answer is—"That system which allows of a proper penetration of the dye liquor through the fibres of the wool, whether it be in the form of tops, or wool, pure and

generally understood, and, therefore, we here give a description of it. By referring to the illustrations, it will be noticed that two vats are arranged one above the other, both heated by steam pipes. A pipe leads from the bottom of the lower, to the top of the upper, vat, through which the liquor is circulated by a centrifugal pump, shown at the side of Fig. 1. In the top of the upper vat is a strainer, shown in Figs. 1 and 2, through which the liquor passes, and, in the bottom of the same vat, buckets are arranged, having perforated bottoms. Each bucket is large enough to contain two or three tops, or loose wool may be placed in them. When the pump is set in motion, the liquor circulates quite freely through the strainer, and then through the buckets, into the lower vat. It will be noticeable that, whilst other machines rely upon force for circulating the dye liquor through the tops or wool, in this invention the simple method of gravitation has been adopted with much success. It may be supposed that where two or three tops are placed in one can, the upper one will receive the full strength of the dye liquor to the detriment of the lower top or tops. This, however, is not the case as, by a simple method, the cans are so constructed as to ensure an equal strength of dye liquor throughout the buckets. This is shown in Figs. 3 and 4, which give the complete can, as well as a section of the same containing three tops. The arrows show the direction taken by the liquor in circulating through the tops. A double can is used, the inner one being perforated so as to allow the liquor to enter the



Lee, Rhodes and Lee's Gravitation Dyeing Machine. FIG. 1.

simple, without in any way agitating or disturbing them. It is the dye liquor which should be agitated, and not the wool, in order to secure a good result. But it has been found a very difficult problem to successfully solve. Many methods have been invented possessing different degrees of merit. Amongst the machines that have been brought before the notice of manufacturers and dyers during the last few years may be mentioned the following:—A machine for dyeing wool or tops or balls, patented in 1837, by Messrs. Clegg and Lee, Manchester. A similar machine patented in 1885 by Mr. W. Mather of the same place. Then Messrs. Salt and Stead, of the firm of Sir Titus Salt, Bart., Saltaire, produced one in 1885. Mr. Lewis, a Bradford gentleman, invented a process in 1889. Then, later, Mr. J. Walker, dyer, Dewsbury, placed a machine before users, and Messrs. Read, Holliday and Sons, Huddersfield, also, have patented one. The subject has occupied those interested in the matter in other countries, for we find a Mr. W. Scott Alexander, of New York, and Herr Obermaier, a German, patenting machines in this country. The former in 1887, and the latter as far back as 1883. This is a moderate list of patents for an invention for such a purpose as dyeing wool, but there is yet one other, patented by Messrs. Lee, Rhodes and Lee. Of many of the foregoing machines we have not heard recently and, consequently, we cannot determine their fate, but that of Obermaier has attained considerable success, for it is simple and easily understood. Most manufacturers are familiar with this machine, therefore, we need not describe it here, but that of Messrs. Lee, Rhodes and Lee is a new invention, its principles are not

tops just at the point where the liquor circulating through the first top may be considered to be weakened. For the dyeing of loose wool, the inner can is removed, and a copper gauze false bottom inserted, which is constructed in three pieces, and upon this the wool rests. We have seen and tested materials dyed by this process, and we could not fail to notice that there was perfect uniformity of shade throughout. The machine can be constructed in any size from one can upwards, but a machine for 12 cans is found the most convenient, and in this from 24 to 36 tops, or from 600 to 800 lbs. of loose wool may be dyed at one operation. It is, further, a very convenient invention, as, for each process of dyeing, the cans may be lifted by hand or by other means into another machine, and the process continued. Mr. Rhodes's patent logwood extractor, which we noticed some months ago, is arranged to work in connection with this machine, as will be seen by the illustrations. The following are some of the advantages to be derived from the use of such a mechanism as the one under notice:—The pump simply lifts the liquor from one vat to the other, and, as no force is employed, the material is penetrated by the action of gravitation only. Moreover, the material is thoroughly penetrated, and the difference in colour between the outside and the inside is avoided; by a less expenditure of labour, a greater weight of material can be treated than by the old mode, and this can be gained by a smaller expenditure of motive power than under many mechanical methods; there is neither felting nor matting of the fibres, and, consequently, there is better spinning; there is less waste, and tops which are dyed at a slight tension spin straighter and further; there is no reeling

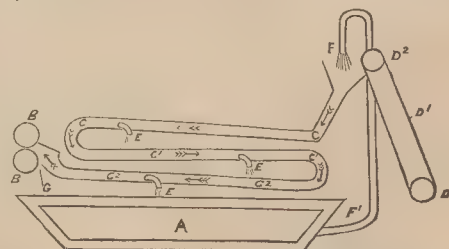


into slubbing from the top, and no twist to put in and take out again, and a better yarn and a better fabric can be manufactured. Further particulars may be had from Mr. Rhodes, dyer, Gomersal, near Leeds.

### Woodhouse and Rawson, United, Limited.

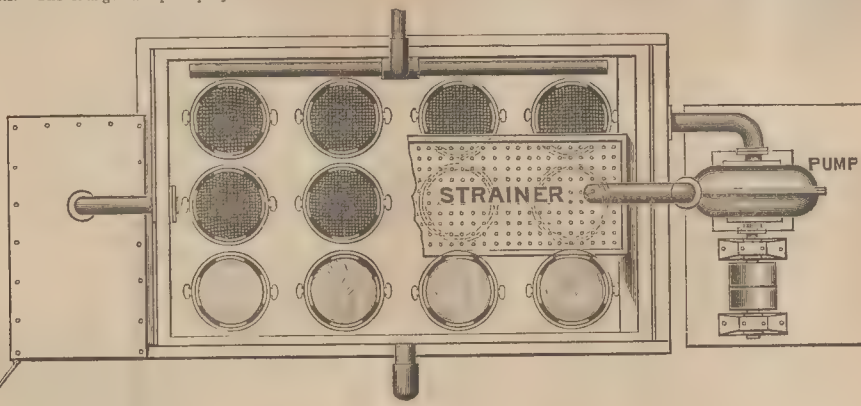
Messrs. Woodhouse and Rawson, United, Limited (late Chas. C. Baker and Co., Limited, Manchester), have just completed an extensive installation of the electric light at the works of Messrs. Dobson and Barlow, engineers, Bolton. The plant consists of 650 16 C. P. incandescent lamps, of the well-known W. and R. type, which are used to light three of the workshops. The lamps are fixed to the existing gas brackets, and are each controlled by a switch of special design, which allows of the light being turned on or off at will. The current is brought to the lamps by means of flexible cord, so that the lamp can be placed in any position the workmen desire. In addition to these, there is a 500 C. P. incandescent lamp used to light up the yard. The current is supplied to the lamps by means of two compound wound dynamos, of the latest and most approved type, each capable of lighting 450 lamps. The parallel system is employed, this being necessary on account of the great variations in the number of lights burning, so that it is possible to switch a machine in or out of circuit without it being noticed on the lamps. The current is brought from the dynamo machines to the switch board, and is then conveyed by means of three separate circuits to the workshops where the light is employed. The S.B., which is of very handsome appearance, is fitted with the well-known W. and R. loose handle switches, mounted on a black enamelled slate base. There is a switch for each of the circuits, and a double pole safety fuse in each. In addition to these precautions there is a magnetic cut-out placed in each of the dynamos' circuits. These are to cut out a 250 ampere. Some considerable improvements have lately been made in these well-known instruments. The changes are principally directed towards the

the sud and wool are introduced simultaneously, the sud is caused to flow forward, carrying the wool along with it at a rather slow speed, and by the time the water and wool have reached the squeezing rollers, the wool has been efficiently washed. The operation of washing is carried out as follows:—The wool is fed on to an apron, D, from thence it is carried over the roller, D', and dropped into the tank, C, and at the same time the sud is being pumped out of the tank, A, and is carried through the pipe, F', to the outlet, whence it flows into the tube, C; the sud then carries the wool slowly



Ambler's Woolwashing Machine.

along the tube, C, in the direction of the arrows, until it reaches the end, when it falls down into C', and continues its course and falls to C'', and is then carried through the squeezing rollers, BB, and, when a second washing is required, the operation is carried out in a similar manner. Of course, when the washing is taking place, there is refuse, such as sand, &c.



Lee, Rhodes and Lee's Gravitation Dyeing Machine. FIG. 2.

better insulation of the various parts, and the more accurate working of the instrument; for instance, slate has been employed in the bases instead of wood. The cups which contain the mercury, and one connecting bar and terminal are now cast solid out of copper, and the arms which dip into the cup are so arranged as to prevent any possibility of spilling the mercury. Very careful attention has been paid to the balancing and pivoting of the armature so as to secure uniform delicacy and certainty in its movement. Messrs. Woodhouse and Rawson fit these new type instruments with a glass front cover of a circular shape, which is secured by a bayonet point, so that it can easily be removed to replace the armature in the cups. Since the introduction of the light in these workshops, it has given great satisfaction. There is, of course, no doubt that, under almost any conditions, the electric light is superior to gas, and, in the present case, the great benefit derived by the hands from the purer atmosphere is a matter which may be particularly mentioned.

### Ambler's Woolwashing Machine.

A new woolwashing machine, in which there are several novel features, was, a few months ago, invented by Messrs. Ambler and Sons, worsted spinners, Wilden, near Bradford, which, judging by the efficient manner in which the washing operation is carried on, ought to find much favour from users of this class of mechanism. The methods of washing as generally carried on are, in a great measure, departed from, as will be seen from the annexed drawing. The usual tank, A, for the soap-sud is used, as are also the squeezing rollers, BB, but in other respects the mechanism is totally different from other machines. There are no moveable rakes for pushing the wool forward, for the simple reason that the wool is not put into the tank A, in fact, there is very little movable mechanism in the apparatus. The main feature of the improvement consists in having a flat tube, in which

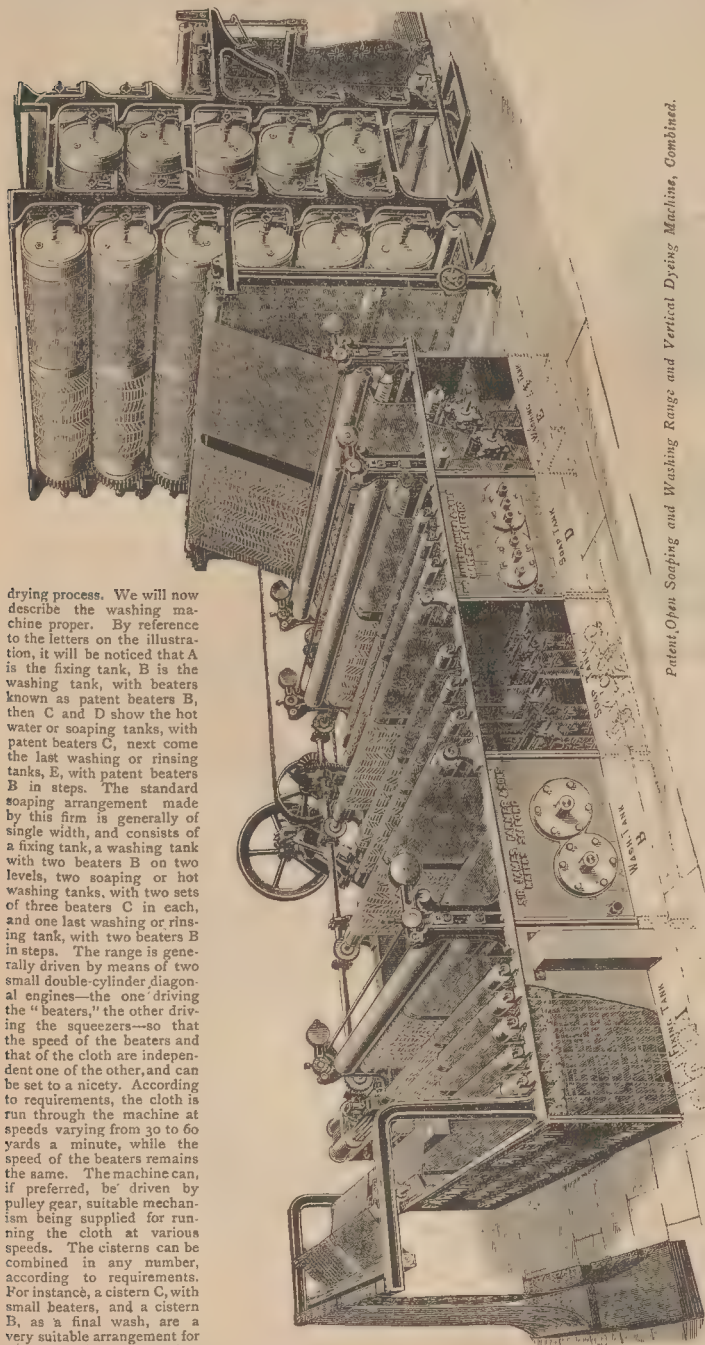
to be cleared away from the tubes. This is effected by taps, E, being placed in each section of the tubes, which carry the refuse down into the tank, A. When the wool reaches the squeezing rollers, BB, the water coming from them, as likewise that continually flowing through the tubes, falls back into the tank, A, through perforations at the upper part of the tube at G, and it is thence pumped back to the pipe, F'. This operation goes on as long as the sud is good for washing efficiently. The tank, A, can be made of any dimensions, as can also the tubes C, C', C'', there being no limit to size. Messrs. Ambler and Sons have two machines in operation, the tubes being 14 inches wide, 4 inches deep, and about 12 feet long; the tanks are made in proportion, whilst the quantity of wool worked through them is calculated at 1,600 lbs. per day, but, with a machine of larger dimensions, of course, a much greater quantity could be washed.

### Patent Open Soaping and Washing Range and Vertical Drying Machine, Combined.

In drawing the notice of our readers to this patent open soaping and washing range, it is not necessary to say anything by way of introducing the makers—Sir James Farmer and Sons, Adelphi Iron Works, Salford, Manchester. The firm is well known to all who, in the many and varied branches of the textile trades, are users of bleaching, dyeing, calico printing and finishing machines; velvet and silk finishing machines; calendaring and embossing machines, &c., and, therefore, we will at once direct attention to the object of our notice. The illustration gives a general view of a double width, open, soaping machine, with drying machine attached. The idea of having a washing machine in direct communication with one for drying purposes has the

advantage of taking up less space, the cloth being kept at a proper tension between the two machines by means of a compensating apparatus. In some branches, this arrangement is in much favour with regard to the

form in themselves a very effective machine, and once the exact treatment is ascertained with this machine, other cisterns, of either complete the range. The cisterns are generally made independent of each other, and delivered ready fitted up. They are thus easily inter-changeable, and, moreover, the erecting is very easy. The heated tanks being apart from the cold washing tanks, an economy of steam is effected. There is great simplicity in the machine, the double action, viz., the flushing and elastic beating, being brought about by the same apparatus, and neither pumps nor injectors are required. Every part of the machine is easy of access, the threading of the cloth being also very easy, without emptying the cisterns. Economy in soap is another notable feature of the machine, the thickening materials of many styles being washed out without soap at all, or, when soap has to be used, the last cistern only is, in most cases, supplied with it, and then rather for its chemical action than for softening purposes. The action of the machine has also the tendency to brighten the colours, no folds being allowed in the machine, as the cloth is kept open throughout; the action of the beaters is such that no rubbing takes place on the cloth, while their beating power is simply enormous. It will be seen also that there is an economy of water and steam, the tanks being only filled to half their capacity, therefore, the waste of liquor and steam when replacing the contents is considerably reduced, and the liquor keeps cleaner than if the cisterns were filled to the top, since its volume is renewed more rapidly. The power required for driving the beaters is very small, as they dip only to a limited extent into the liquor, are very light, and run in ordinary fixings without stuffing boxes. There is no undue strain, the cloth being guided at short intervals, its weight is kept perfectly straight owing to the action of the beaters, which help the cloth forward in about the same proportion as the binding rollers keep it back. There is also an economy of space, the standard soaper being about 22 feet long over the tanks, and giving a production equal, and even superior, to some machines double the size. The open soaper is suitable for heavy as well as for light goods, and has a most effective mechanical action, which is not injurious to the fabric, this being one of the chief points claimed by the makers. The advantages of the double-width machine are its production and economy of space, as compared with the machine of single width, as well as its capability of taking in goods of any width. The machine also can be combined so as to run the goods endless, which treatment is often required for woollen, worsted, and other heavy goods. For moleskins, velveteens, and such heavy materials, these machines prove to be of the greatest value; the fabrics can be cleansed to any required degree, as the action of the beaters is specially suited for these goods. The makers have a two-tank machine, viz., one tank C and one tank B, ready for experiments at their works, and will be glad to run pieces through for any firm interested in the matter. This machine is 40 inches wide on face. They are also ready to supply single beaters, or sets of beaters, in any number, and to provide the necessary drawings for fitting them into existing machines. Sir James Farmer and Sons will be glad to give any further particulars to those applying at the address given above.



Patent Open Soaping and Washing Range and Vertical Dyeing Machine, Combined.

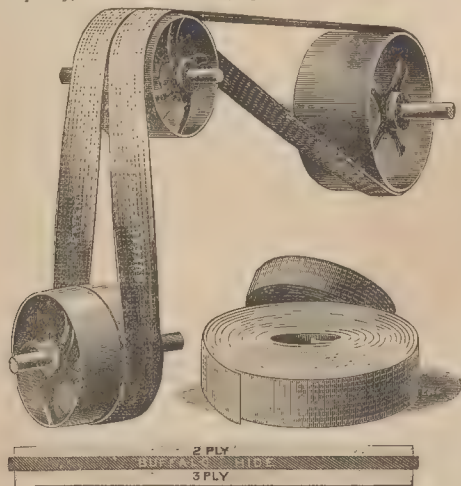
drying process. We will now describe the washing machine proper. By reference to the letters on the illustration, it will be noticed that A is the fixing tank, B is the washing tank, with beaters known as patent beaters B, then C and D show the hot water or soaping tanks, with water or soaping tanks, with patent beaters C, next come the last washing or rinsing tanks, E, with patent beaters B in steps. The standard soaping arrangement made by this firm is generally of single width, and consists of a fixing tank, a washing tank with two beaters B on two levels, two soaping or hot washing tanks, with two sets of three beaters C in each, and one last washing or rinsing tank, with two beaters B in steps. The range is generally driven by means of two small double-cylinder diagonal engines—the one driving the “beaters,” the other driving the squeezers—so that the speed of the beaters and that of the cloth are independent one of the other, and can be set to a nicety. According to requirements, the cloth is run through the machine at speeds varying from 30 to 60 yards a minute, while the speed of the beaters remains the same. The machine can, if preferred, be driven by pulley gear, suitable mechanism being supplied for running the cloth at various speeds. The cisterns can be combined in any number, according to requirements. For instance, a cistern C, with small beaters, and a cistern B, as a final wash, are a very suitable arrangement for experimental purposes; they

### Wolben Buffalo Belting.

The manufacture of belting of different kinds and of a variety of materials has advanced during recent years at such a rapid rate that the industry is now one of wide dimensions, and there is every likelihood of its being still further developed. The mention of belting naturally suggests “leather,” as, formerly, nearly all beltings, and especially those used for the transmission of great power, were made of this material, but, lately, this has given way, in a great number of cases, to woven materials, of which, at present, many kinds are in the market. Some of these we have had occasion to describe in our columns, but the one under notice differs in an important



point from those of which we have hitherto given particulars in that it consists of a working face of woven fabric, and a back of the same material, with an intermediate layer of buffalo hide—the combination of three layers of material giving great tensile strength to the belt, and such as is guaranteed to be equal to that possessed by any yet used. The arrangement of these layers will be seen in the annexed engraving. The upper layer is a 2-ply woven fabric, then comes the layer of buffalo hide, and the next consists of a 3-ply woven fabric, which is the running side. It will be noticed that the layer of hide is rather broader than the woven layers. This in itself has been proved of great utility as, in driving, perfectly safe edges to the belt are guaranteed—the width of the hide preventing any friction upon the edges of the woven material—in fact, we have seen a belt which has been running over six months, and although it had, in a great measure, been working its edges against the belt fork, still the friction had been upon the buffalo hide, consequently, there has been no fraying of the edges of the woven portion



Greenwood and Co's. Woven Buffalo Belting.

of the belting. This continuous wearing of edges has been one of the chief drawbacks hitherto experienced to the success of woven belts generally, but in this belting this disadvantage is entirely counteracted. The belts may be run in either damp or dry atmospheres with impunity, heat or moisture having but little effect on them. They are specially adapted for driving spinning mules, but they are suitable for mills of all descriptions and, where a reliable belt is required, they may be used with advantage. They are well adapted for open or cross driving, and joints of an even nature can be made in the belts equal, in every respect, to those in leather belts, the connections being made by laces, rivets or by other means. During the past two years, these belts have been thoroughly tested in various lengths and widths, and the utmost satisfaction has been expressed by a large number of users, their great strength and perfect gripping power and durability enabling them to transmit, with a minimum of loss, the full power given off from an engine. Messrs. John Greenwood and Co., Limited, Hope Mills, Todmorden, who have the sole control of the belting, will be pleased to enter into correspondence with, and to supply samples to, intending purchasers.

### Bell's Measuring and Rolling Machine.

For the rolling and measuring of piece goods of various kinds, there are many machines now before manufacturers and merchants, all of which possess merits of a more or less advantageous character. In this class of apparatus, improvements are being made from time to time, and of some of these we have, in former issues of our journal, given descriptions. One of the latest machines has recently been perfected by Mr. Charles Bell, machinist, Richard Street, Bradford, and the improvements he has effected over the ordinary run of machines of this class are such as to warrant a detailed description of them. Mr. Bell's apparatus winds and measures accurately all kinds of piece goods. It has hitherto been a matter of no slight difficulty for makers to produce a machine that would wind and measure cloths varying in, what may be termed, pliability, for the reason that different makes of fabrics require different degrees of tension during the process, owing to their liability to stretch, more or less, according to their thickness and the manner in which they have been woven. In this machine, these drawbacks have been entirely overcome by simple, but effective, mechanism, by which, during the operation of winding and measuring, the necessary degree of tension is brought to bear upon the cloth. Again, from various causes, in many of the existing machines, owing to certain mechanical faults, it is a matter of extreme difficulty to wind a whole piece of cloth without creases being formed. These creases are, perhaps, not noticed until a piece is unrolled, but still, if a machine allows them at all, it must be defective in some respect. Mr. Bell guarantees that, with

his apparatus, the creases are reduced to a minimum, in fact, they seldom occur, no matter what the piece of cloth may be composed of, whether it be a thick, thin, hard, or soft material. Where the pieces are rolled by hand, the same drawbacks often exist, unless much time is taken up in the process. The general features of this machine may be gleaned from the following particulars. The operation of winding and measuring is carried out as follows:—The cloth is drawn from a beam or bundle, and is then passed over a tension pulley and round a measuring drum, the circumference of the latter being exactly two yards. From this drum it is guided to the winding block, and is then rolled in the ordinary manner. A worm is fixed on the spindle of the winding drum which, gearing with a wheel, drives a pointer finger around the face of a dial which is marked in divisions of yards and quarter yards. This dial enables the attendant to note the exact length that has been wound at any moment. The winding spindle is driven by a strap and friction clutch, which can be detached by a pedal, and the indicator finger can also be detached and allowed to return to zero, after the measuring of a piece of cloth. On the spindles of the tension and measuring drums, small pulleys are fixed, upon which wooden brake blocks are pressed by means of levers, which sustain sliding weights. The various pressures put upon the drums as required regulate the tension of the cloth, and it decreases as the weights are moved nearer to the fulcrum of the levers. The weights are attached to chains that pass over grooved pulleys at each end of the machine, one of these being driven by a band from the measuring drum. As the latter revolves, which it does by the pull of the cloth, the indicator finger also revolves, and the weights slide along the levers towards the fulcrum. In this manner, the pressure upon the brake blocks is gradually decreased as the winding goes on, and, as a result, the tension on the cloth is diminished as the bundle or roll increases in size. The machine can be seen at work by applying to Mr. Bell, who will furnish particulars, prices, &c

### Keiller's Patent "Circulator."

Keiller's Patent Circulator for steam boilers, by which it is claimed that an even circulation and temperature in raising steam is obtained, is drawing much attention at present. It is well known that considerable differences of temperature obtain in the water in steam boilers, and, consequently, also in the plates in different parts, according as they are above or below the source of heat. Such differences of temperature occur in various constructions of boilers; for example, in a tubular ship boiler, the water above the grate will have a higher temperature than the water below the source of heat, and in a Cornish boiler, the water above the upper portion of the tube forming the crown of the furnace and flue, being acted upon directly by the products of combustion, will have a higher temperature than the water and plates in the lower portion of the same boiler. These marked differences of temperature cause unequal expansion and contraction of the boiler plates, and consequent leakage at the rivets and joints, and are liable, ultimately, to render it impossible to keep the boiler tight. This apparatus is designed to obviate these evils, by providing mechanical means whereby circulation of the water in a boiler may be ensured, as required, in such a way as to equalise, or to approximately equalise, the temperature of the water throughout the boiler. For this purpose, there is provided an agitator, carried and operated by a shaft or spindle that protrudes through the shell of the boiler, and can be actuated in a rotary sense from without, by hand, through the medium of a crank handle, or it may be driven by other power. A stuffing-box is provided, so that the shaft or spindle may be packed to prevent leakage where it passes through the boiler shell. The agitator is constructed with blades, which may be arranged in any convenient manner, as, for instance, like those of a paddle wheel, but the arrangement preferred is with a screw. The following table shows by actual experience the different temperatures in raising steam in a 30-horse power boiler on board the *Iris* (s.s.); this proves conclusively that by using the "Circulator" there is a regular and even temperature in raising steam throughout the boiler, and thus no undue expansion or detriment can occur. The temperature of the water was correctly ascertained by taps introduced at the bottom of the boiler, as well as at the water level:—

Time.	Temperature in degrees Fahr.		Observations.
	Top part of Boiler.	Bottom	
9.15 o'clock	46	46	Firing-up begins.
9.30 "	54	46	" "Circulator" worked.
9.45 "	68	72	
10 "	100	100	
10.15 "	122	124	
10.30 "	153	154	
10.45 "	176	180	
11 "	198	205	
11.15 "	208	208	2lbs. steam.

We may remark that the reason of the temperature being a few degrees higher at the bottom of the boiler than at the top is owing, we presume, to the greater density of the water at the bottom. As a comparison, the following data, taken in firing-up the same boiler under exactly the same conditions, but without using the "Circulator," are furnished:—

Time.	Temperature in degrees Fahr.		Press. in lbs.	Observations.
	Top part of Boiler.	Bottom.		
8.30 o'clock	43	41	0	Strong fire.
8.45 "	48	41	0	
9 "	63	43	0	
9.15 "	118	"	0	
9.30 "	165	"	0	
9.45 "	194	"	0	
10 "	198	"	30	
10.15 "	207	"	45	
10.30 "	207	"	68	
10.45 "	207	"	70	

9.40 o'clock steam begins to form.

At this point, the "Circulator" was turned, and in five minutes the temperature at the bottom of the boiler rose from 43 deg. to 144 deg. l. Duly signed and attested. The reason of the temperature of the water at the top of the boiler not passing 207 deg. was because the trial tap for testing the water was fixed about 4 in. under the water service. It is claimed that the "Circulator" is cheaper and more effective than anything in the market; it requires no expensive pipe connections, valves, taps, &c. In marine or other boilers with one flue, the "Circulator" is best placed on one side of the flue. In boilers with two flues, it should be fixed between the two flues. In boilers with three flues, it may be placed on one side of the centre flue:—In a word, the "Circulator" may be fixed in accordance with local circumstances and where it is found most handy. It should be turned alternately to the right and then to the left, and not continuously—only occasionally, say, when coal is being thrown on, only for a few minutes. When the steam is up and the boiler is of one even temperature, of course, the "Circulator" is at rest. This apparatus does not in the slightest interfere with the blowing out or cleaning of the boiler. The sole Agents for Great Britain and the Colonies are Messrs. George Thomas and Co., Manchester.

### Improved Flat Carding Engine.

An ingenious improvement has been made in revolving flat-carding engines. In this arrangement, the rigid bend is made hollow, and the bottom surface is made to correspond or to be concentric with the card surface of the cylinder. On this surface slides, by means of worm and wheel gearing, a curved incline, on the top surface of which rest the lower ends of a number of pins. The latter pass through holes in the flanges of the rigid bends, and are thus steadied in their outward radial movement, caused by the sliding of the curved incline in one direction or the other, the top ends of these pins also supporting the flexible bend. For grinding the flats, a bracket is attached to each rigid bend, and in these slide other brackets, over which each end of each flat travels. The sliding brackets are suitably adjusted by a set screw.

### Tribunal of Commerce.

The bill for providing "tribunals of commerce," which has been introduced into the house by Mr. Jacoby, Mr. McLean, and others, has, apparently, been partly modelled on the clauses of the Railway Rates and Charges Act, defining the constitution of the Railway Commission. It is proposed that there shall be two courts in London, and a central court, over which a judge shall preside, assisted by two merchant judges. There is also to be a similar district court in each of nineteen districts, of which Newcastle-on-Tyne, Leeds, Bradford, Hull, Middlesbrough, Sheffield, Birmingham, Liverpool, Manchester, Chester, Nottingham, Cambridge, Norwich, Oxford, Northampton, Cardiff, Bristol, Plymouth, and Southampton are to be the centres. These courts are to have jurisdiction over the whole area within which the county courts in each district now have jurisdiction in bankruptcy. There is to be a local court in each of the metropolitan county court districts and each of the places named, constituted by two merchant judges and the registrar, who shall be the legal assessor. The judges will be county court judges, appointed for that purpose by the Lord Chancellor, and movable from one district to another. The merchant judges will be chosen in each district by the merchants themselves, and appointed by the Lord Chancellor, and will agree periodically among themselves upon a rota for court duty; but non-attendance or non-residence for six months will disqualify a merchant judge from continuing to act. The merchant will, in the first place, consist of twelve gentlemen representing capital, or employers elected by the Chamber of Commerce, and twelve members elected by the employed. Each of these sections will appoint three more members who from judges will appoint a clerk for the district tribunal; and the judge will also appoint for himself a clerk and usher. These tribunals will have jurisdiction for the recovery of any debt above £20.

### Trade Marks in France.

An important trade mark case, affecting British manufacturers doing business in France, has recently been decided by the French courts. A firm of Birmingham pen makers registered in France the trade mark of a box, in book shape, to contain pens, and finding that a rival firm were also using boxes made like books, seized some of the latter, and brought an action for infringement of rights. As, however, the trade mark had not been registered in England, and as the plaintiff firm had no factory in France, the Tribunal of Commerce decided that their claim was invalid, as French law only guarantees trade marks of foreigners already registered in their own country. The Superior Court have since confirmed this decision, and have raised the damages for illegal seizure from £40 to £200. It is thus clear that the registration of a trade mark in France is of no avail unless it has been registered in this country, if the owner be a British subject, and has his works on this side the channel.

Last Saturday week, a meeting of members of the Leeds Chamber of Commerce and of Labour Representatives was held in that town for the purpose of forming a Board of Conciliation to which trade disputes may be referred. The meeting was attended with success, and it is expected that such a board will be formed.



### Personal and Trade Notes.

We understand that Messrs. Charles Mitchell and Co. have taken over the business of Messrs. Robinson and Dean of Silsden. Mr. James Barker, Tudor Street, Manchester Road, has bought the business of Messrs. H. Firth and Co., Shearbridge Mills, Bradford.

The Jersey Mill Company, Limited, has been registered to carry on cotton spinning and manufacturing. The capital is £2,000 in £1 shares.

The firm of Messrs. Sugden, Keighley and Co., worsted spinners, Keighley, has been registered as a limited company, with a capital of £60,000 in £10 shares.

We are informed that a new company of spinners will shortly be registered under the name of Bursill Spinning Co., and will carry on business at Dean Mill, Rochdale.

We are informed that the woollen mill, formerly in the occupation of Messrs. McLaurin and Co. of Langholm, has been acquired by Messrs. Wilson and Gilchrist of Hawick.

A company has been registered with a capital of £150,000, in £10 shares, to take over the business of flannel manufacturing, carried on by Messrs. Kelsall and Kemp at Rochdale.

The movement for an extension of the Yorkshire College, Leeds, begun some few months ago, has resulted in £30,000 being subscribed towards the £40,000 required to pay for the extension.

Mr. James Robinson, managing director of the Springhead Spinning Company, died recently at Liverpool, where he resided, at the age of 57. The death resulted from inflammation of the lungs.

At a meeting of the Waverley Co-operative Store Company, Galashiels, held recently in the Public Hall, it was resolved to confirm a resolution to take 300 shares in the Tweed Co-operative Mill at Selkirk.

In consequence of the woollen trade in Milnor being in a very poor condition, Messrs. Blackburn, woollen manufacturers, have paid up their hands and given notice that the place would be stopped *sine die*.

An English syndicate has purchased 650 acres of land at Lenover, Pennsylvania, with the intention of erecting a cotton mill. If successful, the experiment will prejudicially affect the cotton industry of Lancashire.

The firm of Messrs. James Howarth and Co., cotton manufacturers, Oxford Mill, Rochdale, has been registered as a limited company, under the name of the Oxford Mill Company, with a capital of £60,000 in £100 shares.

A woollen cloth factory at Grahamstown, South Africa, has claimed the Government bonus of £1,000 for having turned out 10,000 yards of Colonial cloth, and they are now producing 800 yards of serges, cloths, and tweeds per week.

Mr. William Turner and Mr. Thomas Rutherford have acquired, from Mr. Fingland, his whole stock in trade, and will commence business in Mansfield Mills, Hawick, on their own account, under the name of Turner, Rutherford and Co.

Mr. A. G. Day, eldest son of Mr. George Day, woollen manufacturer, Wharf Mills, Ravensthorpe, has been married at Harrogate to a young lady of that place. The workpeople employed at Wharf Mills, to show their respect towards him, made him a present of a handsome sterling silver salver.

The firm of Messrs. Samuel Sutcliffe and Son, for many years engaged in business as cotton spinners and lessors of room and power at Valley Mills, Bradford, has been registered as a limited liability company, with a capital of £90,000. The first two directors are Messrs. Frank and Albert Sutcliffe, whose remuneration will be decided in a general meeting.

Messrs. Eeroyd and Sons, Limeshaye Mills, near Burnley, and Messrs. Ambler and Sons, of Wilsden, near Bradford, have amalgamated their works. The manufacture of stuff goods will be carried on at the former mills, and worsted spinning at the latter.

The death has occurred, at his residence at Dewsbury, of Mr. John Auty, of the firm of Messrs. J. and W. Auty, carpet manufacturers, Watergate. Deceased was 68 years of age, and one of the oldest manufacturers in Dewsbury and district. He was formerly a member of the Dewsbury Town Council, on which body he served for a period of ten years.

The restarting of the Navigation Mill, Blackburn, which has been standing idle for some time, will be of inestimable benefit to that town. The proprietors, Messrs. Hartley and Carter, have been supplied with spinning machinery, over 20,000 spindles, by Messrs. Crighton and Sons, of Castlefield Iron Works, Manchester, which, we understand, is giving every satisfaction.

The Drapers' Company having offered £3,000 towards £12,000 required to establish Technical Schools in Nottingham providing the whole sum be raised by June, a further donation of £3,000 was made from funds left by the late F. C. Cooper, and the town council have decided to give the remaining £6,000 required, thus, before long, Nottingham will be provided with Technical Schools worthy of the Lace Centre.

The firm of Messrs. Read Holliday and Sons has been registered as a limited company, for the convenience of settlement amongst the partners, and to prevent the risk of breaking up the concern. It has a nominal capital of £200,000, of which £90,000 is in preference shares, and £110,000 in ordinary shares. The company now offer for subscription £60,000 of 4½ per cent. mortgage debentures, (one half of which have already been applied for) and £10,000 five per cent. cumulative preference shares.





## PATENTS.

### Applications for Letters Patent.

Bleaching, dyeing, &c. S. D. Keene, London.	25th Feb.	3,009
Ballooning on ring frames, &c. G. Walker and W. Parker, Rochdale.	11th Mar.	3,815
Bearing (footstep) for spindles. I. Etrich, London.	18th Mar.	4,238
Blowing, beating, or cleaning fibres. J. A. Hart and D. C. Baynes, London.	21st Mar.	4,438
Cropping machines for hearthrugs, &c. J. Beaver, Halifax.	24th Feb.	2,929
Cutting wool, &c. J. Howard and J. H. Geddes, London.	25th Feb.	3,018
Curtains, &c. (coloured lace). J. B. Wharton, London.	25th Feb.	3,038
Checking shuttles of looms. G. Thompson and J. Hampshire, Huddersfield.	27th Feb.	3,149
Carpets (Kidderminster, Scotch, Ingrain). G. T. Todd and W. Tannahill, Glasgow.	27th Feb.	3,167
Cloth stretching machines. C. L. Jackson, London.	28th Feb.	3,201
Cotton gins. W. Fenwick, Manchester.	28th Feb.	3,210
Carding engines with revolving flats. J. Pollitt and J. Mullen, Manchester.	10th Mar.	3,748
Cleansing wool and apparatus. H. A. A. Dombrain, London.	13th Mar.	3,971
Carpets (tufted-pile). G. W. Grosvenor, Kidderminster.	14th Mar.	3,989
Controlling speed of rotation of spindles in mules. J. Higginson, Birmingham.	14th Mar.	4,008
Cop bottom-governing (automatic) motion for self-acting mules and twiners. R. Clegg, Manchester.	15th Mar.	4,048
Cutting cloth, &c. H. Smith and E. Sutton, London.	18th Mar.	4,209
Covers for ring throistles. W. P. Thompson, Liverpool.	18th Mar.	4,259
Curtains, &c. (lace). A. Watson, Birmingham.	21st Mar.	4,424
Down quilts, &c. E. W. Frankenburg, London.	27th Feb.	3,132
Driving, brake, and box operating mechanism of looms. R. L. Hattersley and J. Hill, Keighley.	28th Feb.	3,194
Drying machines. J. F. Johnstone, London.	3rd Mar.	3,383
Drawings on handkerchiefs, &c. H. A. McColl, London.	8th Mar.	3,687
Dobby or shedding motion. J. Culpan, Halifax.	8th Mar.	3,696
Designs on lace, &c. J. Hall, New Bedford.	11th Mar.	3,816
Dressing lace, gauze, &c. C. J. Cox, London.	15th Mar.	4,097
Dressing and winding yarn from warp. R. Armitage, Bradford.	20th Mar.	4,361
Easing shuttles in looms. R. Eccles, Halifax.	24th Feb.	2,930
Embroidery (open work). J. Steiger-Meyer, London.	17th Mar.	4,159
Edgings (scaloped). J. Steiger-Meyer, London.	17th Mar.	4,160
Fringed shawls and shawl fabrics. G. Reiss and J. Bauer, Manchester.	28th Feb.	3,181
Fabrics (circular ribbed) and machinery. W. H. Revis and J. Marriott, Nottingham.	10th Mar.	3,738
Fastener (belt). J. G. Lane, London.	10th Mar.	3,742
Textile fabrics (ornamenting). H. Blakeley and C. Beving, Manchester.	10th Mar.	3,749
Grinding surfaces of cards or flats of carding engines. G. Casey, London.	28th Feb.	3,179 and 3,881
Governing motion of self-acting mules and twiners. J. Boardman, Manchester.	13th Mar.	3,928
Grinding revolving flats of carding engines in situ. S. H. Brooks and J. Edge, Manchester.	14th Mar.	4,081
Hosiery. G. Hadden, Manchester.	28th Feb.	3,188
Hearth rugs and mats. W. and T. W. Millward, Manchester.	28th Feb.	3,189
Hair from vegetable fibre. H. H. Lake, London.	8th Mar.	3,725
Hosiery. H. B. Ashford, London.	14th Mar.	4,033
Humidifying air of factories, &c. W. Tattersall, Bradford.	15th Mar.	4,051
Jacquard harness and lingoes. A. B. and H. B. Barlow, Manchester.	18th Mar.	4,196
Letting off motions. J. Kirkbridge, London.	24th Feb.	2,911
Looms. J. Seed, London.	24th Feb.	2,935
Lace. E. Doughty, Nottingham.	28th Feb.	3,190
Looms, mechanism for ornamental weaving. R. H. Whytlaw and T. McLaren, Glasgow.	4th Mar.	3,420
Looms. J. Heer, London.	10th Mar.	3,773
Looms. E. Smith and T. Cooper, London.	11th Mar.	3,848 and 3,849
Looms (circular) H. J. Hadden, London.	12th Mar.	3,903
Let-off mechanism of looms. J. and R. Lindsay, Glasgow.	20th Mar.	4,334

Lace, &c., (two sided spots on). S. G. Packer, London.	21st Mar.	4,463
Mules (self-acting). G. Hartley, London.	17th Mar.	4,110
Marking (automatic) fabrics. W. G. Gass, Bolton.	18th Mar.	4,205
Mordanting cotton and other vegetable fibrous materials. W. Turnbull, W. Stockdale and G. Duerr, Manchester.	21st Mar.	4,450
Net-lace or tulle (coloured) for curtains. A. J. Boulton, London.	21st Mar.	4,453
Protecting throw straps and pickers. F. Wanécék, London.	25th Feb.	2,999
Pressing and steaming cloth, &c. N. H. Lake, London.	26th Feb.	3,093
Printing fabrics. E. and A. Samuel, London.	1st Mar.	3,301
Patterns on woven fabrics. A. H. Lee, Manchester.	8th Mar.	3,686
Picking motion of looms. E. and W. A. Rothwell and J. Collier, London.	8th Mar.	3,688
Printing in colours. G. T. Teasdale-Buckell, London.	7th Mar.	3,651
Packing cases for pile fabrics, &c. C. Longbottom, Bradford.	13th Mar.	3,934
Printing yarns. G. Marchetti and H. Crossley, London.	13th Mar.	3,962
Preparing ornamental fabrics for the market. J. Steiger-Mayer, London.	17th Mar.	4,161
Packing and making up cotton wool, &c. W. Jowett, Manchester.	19th Mar.	4,277
Plush fabrics. F. Tonnar, London.	19th Mar.	4,327
Regulator for weaving-loom tackle. E. Höfel, London.	25th Feb.	3,002
Stop-motion for twisting, &c., frames. F. L. Lumb, London.	24th Feb.	2,938
Shuttles for weaving. W. Knight and R. Ashworth, Manchester.	27th Feb.	3,107
Spindles and bobbins (ring-frame). T. Wrigley, Manchester.	28th Feb.	3,174
Selvages of cotton-pile goods. R. Middleton and H. T. Jones, Manchester.	28th Feb.	3,182
Shuttle box looms (circular). R. Foulds, London.	7th Mar.	3,608
Spinning mules. J. M. Hetherington, Manchester.	8th Mar.	3,699
Shrinking and fulling of felt, &c. H. H. Lake, London.	11th Mar.	3,846
Shuttle-checking motion for looms (flexible duplex). T. Calvert and J. Hunt, Preston.	12th Mar.	3,869
Sizing machines for woollen warps. E. Garside, Manchester.	15th Mar.	4,065
Sealskin and other pile fabrics (producing coloured designs on the face of). G. Geissler, Huddersfield.	17th Mar.	4,130
Setting-on lever for looms. R. Crawshaw, London.	19th Mar.	4,274
Shuttle guard. L. Dienst, Manchester.	21st Mar.	4,411
Tubes (leather) for cotton spinning rollers. J. R. Williams, Rochdale.	5th Mar.	3,522
"Traverse motions" for the sliver or roving guides for preparing and spinning fibrous material. J. Dodd, Manchester.	14th Mar.	3,990
Toilet covers, table cloths, etc. W. Dorrington, London.	19th Mar.	4,272
Treatment or finishing of materials of cotton or cellulosic fibres. H. A. Lowe, Manchester.	21st Mar.	4,452
Ventilating and regulating temperature and humidity of atmosphere in mills, etc. B. Ormerod, J. F. Davies and W. Haythornthwaite, Manchester.	1st Mar.	3,265
Winding yarns in pirns or cops. W. S. S. Hunter and J. Machie, Belfast.	5th Mar.	3,498
Warps and hanks during dyeing. W. Norton and F. Hinchliffe, Leeds.	7th Mar.	3,626
Weaving plushes. G. Rath, London.	14th Mar.	4,020
Washing (back) and analogous machines. J. C. Walker, J. E. Stephenson and J. Perry, Bradford.	17th Mar.	4,128
Washing wool. H. and E. D. and H. D. Smith, Bradford.	17th Mar.	4,281
Whiprails of looms. J. Lindsay and R. Allan, Glasgow.	20th Mar.	4,333
Wet stop motions of looms. J. H. Kirk, London.	21st Mar.	4,465
Yarn thread or roving guides. J. M. Hetherington, Manchester.	22nd Mar.	4,495

### Patents Sealed.

13,859	18,461	18,709	651	814	2,160	2,202
2,735	2,816	2,872	2,873	2,889	2,917	2,984
3,152	3,220	3,239	3,351	4,825	5,032	7,539
8,543	12,051	13,781	17,103	1,638	2,225	2,806
3,171	3,194	3,275	3,321	3,333	3,760	7,715
8,174	18,033	18,497	18,630	18,733	415	1,078
3,561	3,695	4,592	4,614	18,901	19,126	19,332
1,119	1,709	2,148	1,186	3,820	3,821	3,909
3,912	3,913	3,934	15,736	16,206	18,617	19,547
19,591	19,749	19,925				

# The Journal of Fabrics AND Textile Industries.

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## Notices.

The Yearly Subscription—payable in advance—including home postage, is 10s. Cheques and Post Office Orders to be made payable to H. & R. T. Lord, 10, Ann Place, Little Horton Lane, Bradford, Yorkshire.

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Readers are invited to forward items of interest to the *Trades* concerned.

The Proprietors will feel greatly obliged if any of their readers, in making enquiries of, or opening accounts with, Advertisers in this paper, will kindly mention the *Journal of Fabrics and Textile Industries* as the source from whence they obtained their information.



## Regulations respecting Commercial Travellers in European Countries and in the Colonial and other Possessions of the United Kingdom.

In reply to a circular issued by the Marquis of Salisbury calling for the regulations respecting commercial travellers in the various countries of Europe, despatches have been received from Her Majesty's representatives at the following capitals:—Vienna, Brussels, Sofia, Copenhagen, Paris, Berlin, Athens, Rome, Cetinje, the Hague, Lisbon, Bucharest, St. Petersburg, Belgrade, Madrid, Stockholm, Berne, and Constantinople. The following is a summary of the particulars given in these despatches:—

**AUSTRO-HUNGARY.**—Immunity from taxes and contribution is enjoyed by English commercial travellers, who travel in Austro-Hungary simply on behalf of English merchants, manufacturers, and men of business, for the purpose of making purchases or receiving orders, with or without samples, and who prove that their employers pay in the country in which the latter are domiciled such taxes and contributions as are imposed by the law on the trade or industry carried on by them.

**BELGIUM.**—Commercial travellers visiting this country on behalf of foreign firms have to take out a fixed license, costing in all 20 frs. (16s.). Stuffs imported by commercial travellers as samples pay the same duty as the merchandise they represent, but certain samples, specially samples of tissues, are admitted duty free, when the pieces are too small to admit of their being used otherwise than as patterns or samples; on the other hand, cuttings from tissues of a certain size, or whole piece, such as shawls, handkerchiefs, cravats, &c., are required, before they are admitted to free entry, to be cut or torn in such a manner as to be unserviceable, and entirely to lose their market value. Each

sample of tissues exceeding 30 centimetres in length throughout the whole width of the piece is subject to duty. Samples imported by commercial travellers, which do not come under the above regulations, can be temporarily admitted free of duty, the re-exportation or return of such samples to the Custom-house being insured by means of a permit of transit (*acquit de transit*), or a pass under security (*a caution*), giving an exact description of the samples, with all the details necessary to facilitate the eventual verification of their identity; samples for which this security is required are besides impressed with the stamp, seal, or lead of the Customs. This certificate is delivered under security or on deposit of the amount of the simple duty; it designates the Custom-house of export, and the term for which the certificate is valid, which cannot exceed one year. If the duty has been deposited at the Custom-house of import, it is repaid at the Custom-house of export after the officials have verified the identity of the goods.

**DENMARK.**—The regulations affecting the right of foreigners to do business in Denmark, and especially to employ commercial travellers, are chiefly contained in the Statute Law of the 8th June, 1839, which has on some points been modified by the laws of the 16th April, 1841, and the 15th April, 1843. According to these laws, the principal enactments of the Danish law as to commercial travellers may be thus stated, viz.:—1. Foreign merchants or commission houses are absolutely forbidden to expose for sale or to sell goods or wares outside Copenhagen or the Danish municipal towns (*Kjøbstæder*), either personally or through travellers. 2. Even in Copenhagen or in the said municipal towns, a foreigner is not at liberty to offer or to sell goods to other persons than to such as are licensed to transact business in such goods, viz.:—merchants *en gros* (*Grosserer*) or *en detail* (ordinary merchants, *Kjøbmænd*, or other persons that have taken out the necessary licenses), manufacturers, and mechanics, and other licensed traders. To merchants, the foreigner may only sell goods in which such merchants are allowed to trade; to manufacturers, mechanics, and other traders, they may only sell such goods as these persons require for their manufactories or trades. Accordingly, it is absolutely forbidden to sell goods directly to the consumers. The goods must not be sold in smaller lots than what is reckoned as sale *en gros* (generally not less than 40 kroner £2 4s.). 3. A foreign commercial traveller is bound to apply to the Custom house official at the first Custom house place where he arrives from foreign parts, and before that official to produce certificates from the magistracy at his place of residence, showing whether it is for his own account or for the account of others that he intends to do business, and, if for other merchants or manufacturers, the certificates must state the names of such other persons or firms. The Custom house official shall then hand to the traveller a certificate, which he must present to the chief officer of police of the place before making use of it. The certificate is valid only for one year, but may, at the expiration of the year, be exchanged for a new certificate, also running for one year. This new certificate is to be issued by the Custom house officer at the place where the traveller is dwelling at the time when the first certificate expires. For such certificate, and for each renewal of the same, the fees are 160 kroner (about £3 16s.). If the traveller represents more than one firm or manufacturer, he has to pay over and above the 160 kroner, a fee of 80 kroner (£4 8s.) for each such firm or manufacturer. If the firm is obliged, during the lapse of the year in which the certificate is running, to change their traveller, a new certificate may be taken out by the new traveller for the remainder of the year without any fees having to be paid. 4. If the traveller is travelling about with samples, he has to pay the ordinary Customs duty on such samples, and the samples are to be shown to the Custom-house officer. The same applies to sample books, &c. 5. On his arrival at any town where the traveller intends doing business, he is to present his certificate to the Custom-house officer and to the chief officer of police. 6. The above enactments also apply to Danish subjects who are travelling for the account of foreigners. 7. If, before showing the certificate to the Custom house officer and the chief officer of police, any commercial traveller should transact any business, he is liable to be fined 160 kroner (about 18s.). For other offences against the above enactments (especially for transacting business without taking out a certificate) the traveller is to be fined, the first time, 64 kroner; the second time, 96 kroner; the third time, 132 kroner. If he offends a fourth time he is both fined 132 kroner and, moreover, loses his right of doing business, and, at the instance of the police, he may be sent out of the country. Besides the above penalties, a traveller may be fined for offences against the Customs laws or for unlicensed trading. Samples of goods that are not presented as the law directs are to be confiscated. In default of payment of the fines, the traveller may be imprisoned as a subsidiary punishment, according to the ordinary rules of the Danish law with regard to the non-payment of fines.

**GERMANY.**—1. The provisions laid down by treaties shall find application in the cases of commercial travellers whose position is legalised by means of a commercial traveller's license (*Gewerbelegitimationskarte*), as prescribed in the State treaties. 2. Commercial travellers belonging to States with which no special agreement has been concluded respecting the commercial traveller's trade license, but which have the right of the most-favoured nation in regard to commerce, require a trading license (*Gewerbelegitimationskarte*) for the conduct of their business in Germany. These cards entitle the holder to purchase goods from tradesmen, or producers of goods, or in places devoted to public sale, and to try to obtain orders for goods from tradesmen or from persons,



who make use of the goods in question in the prosecution of their business, throughout the whole of the German Empire, after he has paid the proper taxes, provided no special provision is made with regard to the latter by treaty of commerce (with the State of which he is subject). He may only carry with him patterns of goods, but no actual goods. The provisions of Chapter III. of the Commercial Code shall be applied in regard to the issue, refusal, or withdrawal, of the cards for the legalization of trade, with the reservation that the fact of having no domicile in the country (section 57 of the Commercial Code) does not form a reason for refusing to issue such a card, and that measures taken upon the basis of these provisions can only be disputed by means of complaint made to the directly superior authorities of police (*Aufsichtsbehörde*). 8. As regards the conduct of the business of commercial travellers (Nos. 1 and 2), the provisions of Chapter III. of the Commercial Code shall receive corresponding application.

GREECE.—Commercial travellers are not subject to any license or permit while travelling in Greece, as long as they are provided with authentic proof of their condition as such.

THE NETHERLANDS.—Whilst different and, in some cases, less favourable regulations are in force with reference to Netherland commercial travellers and those of some other nationalities, as set forth in Article 7 of the Law of the 24th April, 1843 ("Staatsblad," No. 16), British commercial travellers pay, in virtue of Article I. of the convention of the 27th of October, 1837, between Great Britain and the Netherlands, and in view of Article XXIV. of the treaty of the 31st December, 1851, between the Netherlands and the States of the Zollverein, a fixed license duty of 15 fl. 36 c. (£1 5s. 7½d.) per annum. All commercial travellers enjoy the same advantages as regards the patterns which they bring into the Netherlands; that patterns having no commercial value are always admitted free of import duty into this country, whilst goods liable to duty which are imported by commercial travellers to serve only as patterns are also admitted provisionally free of duty, on condition of the observance of the necessary Customs formalities for securing the re-exportation of such goods.

ROUMANIA.—Commission agents, commercial agents, commercial travellers, and, in general, all who serve as intermediaries between manufacturers and commercial houses, shall declare in writing to the Chamber of Commerce, or, failing the Chamber of Commerce, to the local communal authorities (*primăria*), the houses or manufactories for which, or in whose name, they work, and at the same time, they shall deposit a copy of the power of attorney in virtue of which they are authorised to receive orders for their respective houses, whether wholesale or retail. This power of attorney shall be drawn up in accordance with the laws of the country where it is issued, and duly legalised by the Roumanian Legation in that country. The Chamber of Commerce, to whom such a power of attorney is presented, shall register and keep in its archives a legalised copy of this document, recording the date, the articles or products concerned, as well as the names of the commission agents and of the house represented, and shall also deliver a certificate that it has deposited and registered the same. When the power of attorney is presented to the local communal authorities, they shall inscribe the same, and send a legalised copy to be kept by the Chamber of Commerce of the district in which the commune is situated. Due notice shall also be given by the agent or intermediary, to the Chamber of Commerce, of the withdrawal of the authorisation to represent this or that house or manufactory. It is stated in Article 9 of the Law of Licenses (*Legea Patentelor*) that persons who come provisionally from abroad with different manufactures or other articles, and who sell them in retail to individuals, or wholesale to commercial houses, are considered as itinerant (*ambulanti*), and are subjected to a tax of half that paid by merchants dealing in similar articles, *sc.*, as a rule 2½ per cent per annum.

RUSSIA.—Commercial travellers, when visiting all parts of the Empire, with the exception of the Grand Duchy of Finland, need not provide themselves with licenses for the legal prosecution of their business. In Finland, however, by a decree issued on the 26th January, 1889, the provisions of which apply as well to Russian commercial travellers as to those of all other nationalities, all such travellers offering or disposing of wares of foreign origin for their own account, or for that of others, are liable, after a residence exceeding three days in Finland, to a tax of 120 marks (about £5) for the right of trading during one month, reckoning at the rate of a complete month, although only a part of that month may be devoted to trading in the country. At the expiration of a month for which the license was issued, the same must be renewed for a further period of one month, and so on, according to the duration of the time of the commercial traveller's transaction of business in the Grand Duchy. For the infraction of the foregoing decree, a fine is imposed, in addition to the exaction of the established tax, and the proceeds of the fine are shared equally between the informer and the poor.—*Board of Trade Journal.*

(To be continued.)

The advanced students in the pattern weaving and designing class of the Blackburn Technical School have completed their samples for the examination of the City and Guilds of London Institute. Each student has to send up a yard of cloth woven by himself from his own design. Blackburn students will have an opportunity of examining the designs, as an extra yard of each has been woven, and will be placed on exhibition in the Free Library.

## Potash and Soda for Washing Woollen Yarn and Cloth.

It has been repeatedly pointed out, says a writer in the *Deutsche Wollen-Gewerbe*, that for washing wool and piece goods the potash treatment, in many respects, is better for the wool fibre than soda, and that it is advisable to use potash either alone or in the form of soft soap for this purpose. Although the correctness of this assertion is still doubted by many, it is a fact, established by numerous experiments, that the effect of potash upon wool fibre differs in several important particulars from that of soda. This is easily explained, for although the two materials have one point in common, being both alkaline, and in their combination with carbonic acid serve as detergents, they are, in other respects, agents of different natures, and in their chemical reactions vary entirely from each other. In England and the United States, where the use of potash is far more general than in Germany, it is said that wool washed with potash is much finer and silkier in touch than that washed with soda, and is not so liable to become yellow. The experiments referred to confirmed the truth of these assertions. It was ascertained that samples of precisely the same grade of wool, treated with these two agents, showed that the one washed with soda was much harsher in "feel" than the one washed with potash, and, after drying, it assumed a yellowish tinge not visible in the sample treated with potash. The chemical process which produces the yellow tinge upon the wool with soda is still not sufficiently well explained. It is possible, however, that the influence of the soda upon the covering of the wool fibre, which contains fairly large quantities of sulphur, produces the yellow tinge by liberating the latter. Potash has no such reaction. On the contrary, it has a bleaching effect. The harsher feel produced by the soda shows that it attacks the surface of this fibre more strongly than potash. Even the fact that the wool yolk impregnated only with potash salts, but never with soda or its salts, is sufficient to show that potash is more appropriate than soda, and this is generally accepted where potash and the soft soap prepared therefrom have been employed. Complaints that wool became harsh and yellow were far less frequent formerly when wool was washed with urine, or the goods washed and filled with earth and potash soap. This injury to the fabric is partly due to misuse of soda or unduly strong lyes. The use of these agents, however, is required to-day by many of the grades of wool used in the textile industry, especially foreign wools. The necessity of employing larger quantities of lye is the reason why soda is used as a detergent, for potash would be too costly. But whether it is wise to chiefly regard the cost is doubtful, to say the least. The consideration of price should be left entirely out of view when it is desired to obtain a white and soft wool. The manufacturer who produces white goods, cloths, blankets, flannels, etc., should never use any other detergent than either potash or potash soap. Experience shows that soda, even under entirely normal conditions, exerts an injurious influence on the wool fibre, and this fact is now becoming well understood. As a proof of this, experiments to obtain a milder detergent have been made for a long time, and carbonate of ammonia, a milder form of soda, has been employed for wool washing for a number of years, this agent being preferred to the ordinary soda, at least, where the preservation of the good qualities of the wool fibre is desired. From a financial point of view, however, the situation is less favourable, because greater quantities of ammonia soda, as well as stronger lyes, are necessary. Besides this, cases occur, when filthy and dirty wool is to be washed, where ammonia soda, even if used in larger quantities, is not as effective as it should be, and the bath must be strengthened with caustic soda. Notwithstanding this, however, the use of ammonia soda is advisable for fairly clean wool, as this will give it a soft feel and clean appearance, similar to that washed with potash. Potash lye and soft soap are very excellent agents for the scouring of yarn, and should be preferred to soda lye and hard soap, especially when finer qualities of white yarn are to be treated, and it is necessary to have them soft and supple. A recipe for a washing process, which was formerly used very successfully in England, consisted in treating the yarn coming from the spinning frame with potash lye (2½ ozs. potash to 10 lbs. of water) at a temperature of 45° R. [145° F.]. The yarn was then to be rinsed with warm water, and afterwards passed through a slightly acid bath of sulphuric acid (2 ozs. to 10 lbs. of water), in order to neutralize the excess of potash. It is worthy of mention that in this process (Harris') a vacuum apparatus was used. The yarn was placed in a cylinder, which was closed hermetically, a vacuum being generated by means of an air pump. The scouring liquor was then introduced. Air was again admitted in order to increase the action of the lye upon the yarn. The yarn was squeezed out after twenty minutes, and the liquor decanted. The excess of lye was, in the same manner, neutralized by a treatment with sulphuric acid. Soft soap and a little ammonia liquor are the best detergents for fine yarn. Soft soap of medium strength is also excellent for scouring the cloth before fulling. By a little attention, it will become just as clean as when treated with soda, but remains softer in feel. There is far less danger that the colours will be attacked, or that the pieces will become hard and boardlike, as is the case with the least inattention where soda is used. Soft soap and fuller's earth were formerly the only agents used for scouring before fulling. They have been compelled, however, in nearly all mills, to give way before soda, the use of which has become more extensive since red oil was first employed as a lubricant in the spinning mill. The oils used before that time were nearly all of a vegetable origin, such as rape oil,



It is very commonly supposed that the action of the acid on the wool fibre in the carbonizing process is injurious and harmful. This idea has been proved beyond a shadow of a doubt to be false and incorrect, but it has been found, by those who have faithfully and correctly experimented in this line, that wool properly treated by the method above mentioned is in reality superior as regards strength and elasticity. More than this, the cloth which is woven from such stock has been found to have lost none of its valuable or wearing qualities. Indeed, in many instances, this treatment has had just the desired effect, and has really heightened and increased the lustre and inherent qualities of the woollen fibre. Carbonization, then, we consider to be not only a safe and satisfactory method, but really an actual advantage to the nature and qualities of the fibre, and to the appearance and value of the finished cloth, and not, as it is erroneously supposed, an injury and a detriment to both. (See page 56 for article on The Patent Carbonizing Machine Co.). But in the absence of this method of treatment, and where so much attention is not bestowed on the actual destruction and removal of these wool impurities, it falls to the lot of the finisher to devise some means whereby they may be partially done away with or their appearance wholly concealed. This he attempts to do in either of two ways, and actually he is often obliged to practise both:—in the first place, by what is known as specking, and in the second by burr dyeing. The former is a slow and tedious method of carefully going over the piece with specking irons or nippers, and removing by hand all specks and burrs, and, in the latter, we manage to conceal the impurities by colouring them down to the same shade as already appears in the rest of the piece. The burr dyeing may be done in various ways. It is sometimes done in the fulling mills, while the goods are being shrunk. This method is commonly practised only on cheap classes of goods, and it is generally considered to be rather an inferior plan, excepting, as we said above, on certain grades of stock. It would never do on any kind of goods that required a fine finish. We are of the opinion that it is best in all cases to burr dye when the goods are taken from the gigs. In dyeing in the mill, we are apt to make the fabric too moist. This is evident. The piece must, of course, be soaped in the ordinary way before the fulling can take place, then, when the burr dye is applied afterwards, in addition to the soap already present, there is great danger of overdoing the thing, and causing unsatisfactory results. More than this, when the piece is dyed in the mill, it often happens that it has to lie about four hours in the vat before the grease and dirt are removed, and the scouring and gigging are complete. And, again, the teazels in the gigging are very apt to wear off much of the effect of the dye, and to leave our burrs and specks almost as bad as ever. Much better results can no doubt be obtained after the grease and dirt have all been removed. These are the reasons, then, why we consider dyeing after gigging to be superior to the other plan for dyeing in the mills. As regards recipes for burr dyes, we all know that each finisher has his own views, and he naturally thinks they are the best in existence. This, then, is a point which we do not wish to dispute, but we will give a few which can be recommended as safe and sure, and which, if carried out as directed, we know, will give satisfactory results. Since burr dye is usually made in a barrel, we will give our figures for a barrel of 48 gallons. Take 24 pounds of extract of logwood, 15 pounds of soda ash, and 6 pounds of blue vitriol, and we shall obtain a barrel of burr

dye which stands at about 10°. This may be weakened, if necessary, for use by the addition of water in the proper proportions. For making, fill the barrel about one third full of water and bring this to a boil, then add the logwood and vitriol, and boil well until the whole is completely dissolved, then add the soda ash and boil the whole thing for about two hours, keeping it, at the same time, well stirred. The burr dye must be perfectly cold when applied, and as it always takes hold the moment it touches the goods, it does not do to allow the fabric to stand still in the liquor for any length of time, or trouble would surely ensue with cloudy goods. 100 gallons of a very good dye may be made from the following figures:—100 pounds of extract of logwood, 50 pounds of soda ash, and 26 pounds of blue vitriol. Take the logwood and the vitriol together, as above described, and boil them in a sufficient amount of water to completely dissolve them, then add to this afterwards the soda ash liquor, boil as quickly as possible, and stir at the same time for at least two hours, and we shall have again a dye which stands at about 10° and which may be easily reduced to serve our purposes. Under the ordinary circumstances, and on the common run of stock, 3° ought to be quite strong enough to completely cover all the specks and burrs. The dye should be of a dark-lump colour, and, as a test of its condition, take a clean pine stick and allow it to remain in the dye for a minute or so. Then, if the shade is too red, more vitriol should be added, but, if too blue, then soda ash will bring it to the proper point. Now, if we are intending to use this dye on the goods before they are giggered, it will be necessary to run the piece in the washers long enough to raise well the soap, dirt, and grease. If they show a good, rich, lather after running in this way for a while, then it is time to add the dye. Three pails of the 3° dye to each piece will be enough, and it should be allowed to run in the soap and dye for at least 20 minutes longer. Then we should rinse in cold water for three-quarters of an hour, or, at least, until the fabric is perfectly clean. This plan may suit some, but we are satisfied that the results are not as good as they would have been had the dyeing been put off until after the piece was extracted and giggered. Again, we may use three pails of the 2° dye on a 6-4 piece, after it has been scoured and rinsed well with cold water. Then run for ten minutes in the dye, and rinse for 45 minutes in cold water after all is done; but when we do not dye till after the giggering, we use about the same amount as in the above cases, but use it not quite so strong. On most grades of stock, 14° dyes would be strong enough. Goods with cotton warp and wool filling must have different treatment from all-wool fabrics; hence, in burr dyeing mixes and union cassimeres, care must be exercised, or a different effect will be produced upon the cotton from that upon the wool. If the dye was just right to cover all the specks, it would most likely give to the cotton a bluish shade, while, at the same time, it would impart to the wool a reddish tinge, which would altogether affect the appearance of the whole fabric. Where we have cotton, then, in either warp or filling, to deal with, we must adopt another plan in our work. The following recipe will be found successful in most cases, and the dyeing should never be done until after the giggering. 100 gallons may be made from this recipe which will stand at about 16°.—67½ pounds of extract of logwood, 70 pounds of soda ash, 45 pounds of blue vitriol. This must be reduced to 2° for dark shades, and to 1° for light. Then, by using 2½ pails to each piece, and following out the directions mentioned in the last case described, we shall be apt to have good results. If, after this plan has been faithfully carried out, the goods should be found to crock, we must scour longer and rinse more thoroughly before taking our goods out of the washer and drying them for the shears. As regards the methods of applying the burr dye to the goods, we think the best is that in which rollers are used. Allow the cloth to run down into the dye vat from without, and then draw it up between the two rollers situated across the top from side to side of the vat. Be always careful to keep the cloth spread evenly and smoothly on the rollers as it is passed through, never allowing it to wrinkle or curl under at the selvages. These rollers, then, act as do those on a clothes wringer, and the whole surface of the cloth being evenly pressed between the upper and lower rolls receives equal pressure and equal quantities of dye. This, indeed, is a very important feature in successful burr dyeing, and, if the liquor is not evenly distributed throughout the whole length of the piece, we cannot hope to escape the difficulties of "clouded" goods. Sometimes it happens that a blue cast is desired on mixes. This end may be obtained by using twice as much blue vitriol and half as much of soda ash. As the vitriol has the most marked effect on the wool, and colours it the most highly, we must be careful, at the same time, not to use too much of it, but still enough should be employed to cover completely all the burrs and specks. Always test a dye before using it, and be sure to put it on in even quantities. If the dye is always used stone cold, better results will be obtained, and not so much danger exists of goods not shading correctly from use of dyes at all sorts of temperatures. Oftentimes, a prepared ink or speck dye is used for covering and concealing the specks that still make their appearance after the goods are finished. This is put directly on the face of the cloth. This is both a slow and a costly method, and, more than this, as it is often a real damage to the fabric, we cannot recommend its practice except where absolutely necessary. It is best, if possible, to speck dye in the piece, and better results will usually follow. The ink spots will not show then, and no danger need be feared from the effects of dampness upon the spots which, while the goods are dry, are not so apt to be visible.—*Boston Journal of Commerce.*

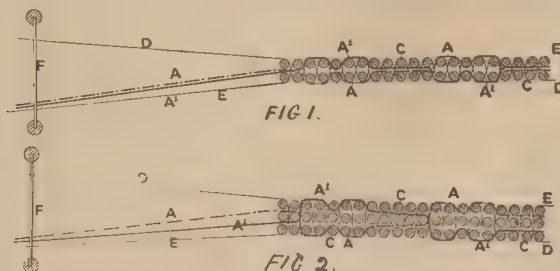




### New Patented Fabrics.

#### REVERSIBLE INGRAIN OR PRO-BRUSSELS CARPETS.

An invention for the purpose of producing patterns on both sides of carpets is amongst the recent patents. The inventor claims that he can produce a greater number of colours in carpets in a cheap and effective manner than has hitherto been the case. In carrying out his object, an ingrain cotton, or woollen, warp is used, and this is operated by the harness. Fig. 1 shows the section of a two-ply carpet, that is where two shuttles are employed, and Fig. 2—a section of a three-ply carpet. A and A' are the two ingrain warps of different colours, C—the weft threads, D and E are the binding warp threads employed for binding the weft together, F represents the reed of loom; the ingrain A, it will be seen, crosses the ingrain A', and is thrown out on the underside of the piece, and again crossed and thrown out on the top side of the piece, whilst A'



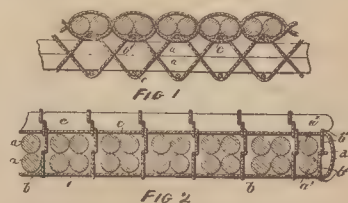
is crossed, and is thrown upon the top side of the piece, and then crossed and thrown out upon the underside, and *vice versa* as required, so producing a distinct pattern on both sides of the carpet. In a two-ply carpet, two distinct colours are produced by the ingrain warp, and two by the weft; and in a three-ply carpet, two colours by the ingrain warp and three by the weft, and so on, one more colour being produced than has been hitherto, whatever the ply of the carpet.

#### WEAVING TURKEY CARPETS.

This invention relates to the weaving of Turkey carpets and other pile fabrics woven or made on the same system, and the object of the improvements is to facilitate the introduction and knotting of the wool or material of which the pile is formed, and, generally, to facilitate the weaving of such goods. To introduce the wool in a proper manner to form a Turkey knot, the warps are curved round through two right angles, or thereabouts, this being rendered possible by passing them through a series of inverted U tubes, each through a separate tube. To knot the wool on any two warps, the wool is passed from the front between the two U tubes carrying the said warps, round the back of these U tubes, and between them again at the front. The loop so formed around the back of the U tubes is slid over the bend of the tubes to the front, and is drawn down—the warps to the fabric—drawn tight, battened, and out off from the supply of wool. Having made a row of knots in this manner, the weft is thrown and returned, and the next row of knots is made in the same manner. The warps are moved through the tubes as the weaving progresses. Since the knots have to be passed down the warps from their upper holders, the U tubes, down to the fabric, leashes cannot be put on the warps to separate them to form the shed for the weft in the usual manner; in place of the leashes, therefore, two rotary series of alternating discs are arranged before and behind the warps respectively. The peripheries of these discs are recessed or embayed in such a manner that, after the series of knots is completed, projecting parts of the discs, the peripheries of which are grooved for the purpose, abut against the warp threads and thrust them respectively outwards and inwards alternately, and not only form a shed for the passage of the weft but also, in their recesses next following, contrive a race for the shuttle. The shoot of weft lying in the race, after the passage of the shuttle, is thrown down upon further rotation of the discs, and the next projecting portions of the discs again form a shed and race for the return of the shuttle by the alternate deflection of the warp threads, the shoot then made being also thrown down towards the fabric.

#### CARPETS AND UPHOLSTERY FABRICS.

This invention relates to carpet fabrics, or fabrics for furniture covering, of the class having a back of inferior material and a face of superior material, and the object is to produce a solid back fabric, having good wearing properties, and a smooth face, either adapted to receive designs by printing, or having the design produced therein by coloured yarns. The invention consists of a carpet or other fabric having a back formed of longitudinal stuffing threads, pairs of binder warp threads, and weft threads; and a face of weft threads united to the weft of the back by binder threads which alternately interlock with back weft threads. Fig. 1 is a longitudinal section, and Fig. 2 is a transverse section. The back has a stuffing composed of groups of four, more or less, strands or threads, A, of jute or equivalent heavy and strong material, arranged parallel to the warp, and laid parallel to one another, and extended from beam to beam, either independently of the harnesses, or through harnesses of their own, in the loom. Between the successive groups is a pair of binder warp threads, B, of cotton or other material, which threads are to be operated as usual by the usual harnesses of the loom; and co-operating with the binder warp threads, and, on opposite sides of the stuffing, are weft threads, C, of cotton or linen. In order to make straight and strong selvages, there is the outside pair of binder warp threads, B', of cotton or other material, and the straight longitudinal thread, D, bound in by the weft, C. The back, thus constructed, is hard, solid, and elastic, in all directions. The face is composed, by preference, of woollen weft threads, E, shot in single, or in pairs, to make a smooth surface, and bound in by worsted warp threads, F, arranged in pairs, and harness operated, and these weft threads, E, are laid flat across the back without loops, and



beaten up closely. The warps, F, alternately, are engaged with the cotton wefts and are crossed between each two pairs of woollen wefts. The patentee claims that the woollen weft, running at right angles to the stuffing, cannot sink into it or between its constituent members, and hence a very hard and solid carpet is produced, which will not permit dust to sift through. The face being hard, flat, and smooth, will not "sprout" as does tapestry or body-Brussels—that is, the face yarns will not catch and pull out, and will not catch and hold dirt; it may be swept easily, and is susceptible of being easily and very perfectly printed. Made up in solid colours, the carpet is particularly well adapted for halls, and for filling under and around rugs. The selvaige being straight, lengths of this carpet may be sewed together with abutting edges, as in the case of tapestry Brussels, and the like. The selvaige preferably contains also the two stuffing threads, A', arranged one above the other.

#### SELVAGES OF COTTON PILE GOODS.

This invention relates to cotton pile goods, such as cotton velvets, velveteens, plushes, and the like, and has for its object the enriching and improving of the appearance of such goods in the piece by brightening and imparting a finished appearance and richness to the selvages, thereby improving the appearance of the pile fabric. Generally speaking, as at present manufactured, the uncut selvages of cotton pile goods, having, by reason of the material, no inherent richness of appearance or texture, are dull, and do not display the cut pile portion to advantage; but, according to this invention, the desired result is attained by entirely, or partially, covering the faces of the selvages by ribbons, or strips of fabric, composed, for example, of materials superior in quality and appearance to the general body of the goods, or treated or finished in such a manner as to have a superior effect, and by this means, the appearance of the piece is improved. The ribbons or strips may be composed of silk, or of a mixture of cotton and silk, or of cotton alone, and an important feature of the invention consists in the improved method of securing them to the selvages by means of adhesive cement composed of, or containing, India rubber, or of such other materials as will form an adhesive cement suitable for the purposes. These ribbons or strips may be cut from existing fabrics, or they may be specially woven for the purposes of the invention with coloured lines, or with geometrical, or ornamental, patterns in colours, or effects of light and shade, or such ribbons or strips may, in some instances, have their decorative or other effects produced by printing, watering, or other well known processes. When ribbons or strips of the indicated nature are secured by adhesive cement

to the selvages of cotton pile piece goods, the appearance of the goods is very sensibly enhanced, and a brilliant and rich effect is obtained, which adds materially to the saleable nature of the fabrics to which the invention is applied.

### Tariff Changes and Customs.

**UNITED STATES.**—Cotton cordage and cotton braided cord—thirty per cent. ad valorem. Cuffs of cotton, linen, or celluloid, five cents per pair, and thirty per cent. ad valorem. Curtains, when made up, trimmed or untrimmed, thirty per cent. ad valorem. Collars of cotton, linen, or celluloid, twenty cents per dozen, and thirty per cent. ad valorem. Coloured fabrics, woven in whole or in part of dyed or coloured cotton, yarn, of jute yarn, of part jute and part cotton yarn, of other material except silk, n. e. s., twenty per cent. ad valorem. Woolen netting for the lining of boots, shoes, and gloves, twenty-five per cent. ad valorem. Smyrna carpets, mats and rugs, thirty per cent. ad valorem. Screen and window screens of cotton, plain or coloured cambric cloths, muslin apron checks, brilliants, cords, pique, diapers, lenos, mosquito nettings, Swiss jaconet and cambric muslins, and plain, striped, or checked lawns, twenty-five per cent. ad valorem. Manufactures composed wholly or in part of wool, worsted, the hair of the alpaca goat, or other like animals, viz. blankets and fannels of every description; clothes, doeskin, cassimeres, tweeds, coatings, overcoatings, felt cloth of every description, n. e. s.; horse collar cloth, yarn, knitting yarn, fingering yarn, worsted yarn; knitted goods, viz., shirts and drawers, and hosiery, n. e. s., ten cents per pound and twenty per cent. ad valorem.

#### Articles admitted Duty Free.

Cotton yarns, not coarser than No. 40, unbleached, bleached, or dyed, for use in covering electric wires; also for the manufacture of cotton loom harness, and for the manufacture of Italian cloths, cotton worsted fabrics. Cotton yarns, in cops only, made from single cotton yarns finer than No. 40, when used in their own factories by the manufacturers of Italian cloths, cashmere and cotton cloths, for selvages of said cloths, and for these purposes only. Wool and the hair of the Alpaca goat and of other like animals, not further prepared than washed, n. e. s. Noils, being the short wool which falls from the combs in worsted factories. Blanketing and lapping and dices or mills for engraving copper rollers, when imported by cotton manufacturers, calico printers, and wall paper manufacturers, for use in their own factories only. Yarns, made of wool or worsted, when genapped, dyed, and finished, and imported by manufacturers of braids, cords, tassels, and fringes, to be used in the manufacture of such articles only in their own factories.

**ITALY.**—The following decisions affecting the classification of articles in the Italian Customs tariff have recently been given by the Italian Customs authorities:—Cotton and silk lace mixed with metal threads.—Categories—116, 107, 109 (a, c). Duty, 680 lire per quintal. Small shawls of mixed textiles, in which silk is not less than 12 and not more than 50 per cent., with an imitation fringe of woollen threads. Duty, 8 lire per kilo; with 50 per cent. additional for the embroidery. Tissues of cotton, dyed, having less than 27 threads in warp and wool in a square of 5 millimetres, &c. Duty, 109 lire per quintal.

### Finishes for Cotton and Linen Goods.

Goods should receive, after dyeing or printing, such a finish as will add to the good appearance. Finishing consists of two different operations. The goods must first be covered with some substance which will give them weight and make them look like a heavier or better piece of goods, and, by mechanical means, it must be given the necessary lustre and feel. The first operation requires such substances as starch, glue, gum, and dextrine. Starch is the most important on account of its cheapness and the results which it gives. In general, potato and wheat starches are used; rice, corn, and others are less employed. The difference between wheat starch and potato starch, besides the price, in its properties merits attention. Potato starch gives a finish which is firmer and heavier. The potato starch paste is made in a tub and boiled by direct steam, the proportions used being 10 pounds of starch to 25 gallons of water. The starch is mixed with lukewarm water at first, and brought to a boil by direct steam, and boiled for 10 minutes, stirring constantly. This method must be followed to obtain good results. A starch of good quality ought to ferment with difficulty, ought to have the same consistency throughout, and ought not to become granular rapidly. If it froths, granulates, or will not settle from water in 10 or 15 minutes, it is of poor quality and, perhaps, not worth more than 50 per cent. of a good article. Care must be taken not to boil too long, and the steam must be shut off, for, if potato starch paste is boiled too long, it becomes thin and does not give a uniform finish. Still more care must be taken with wheat starch. It must be brought to a boil and boiled for 15 minutes by steam, which should have a pressure of 4 to 5 atmospheres. It is also a good way to cover the boiler with a tight cover, and then to blow in steam for 10 minutes. In this manner, the full strength of the starch can be obtained. If a mixture of potato and wheat starch is to be used, boil the wheat starch first, cool the paste to 180° F., and then mix in the

potato starch with boiling water. If finishing with such a paste is attempted, it is found to be very difficult, and, to get rid of difficulties, various materials are added, of which the most important is tallow, in the proportion of 1 to 5 per cent. of the weight of the starch. Goods strongly starched can hardly be calendered without using tallow. The goods must be moistened, and in this state, under a pressure of many tons, they gum and the finish is spoiled. If tallow be added, this trouble is less to be feared; too much tallow (8 to 10 per cent.) renders the goods too soft and greasy; it makes linen seem like cotton. To give cotton, or part cotton, goods, the appearance of linen, add to the finish, besides the tallow, an equal weight of Japan wax. This gives brilliancy and weight to the fibre. In calendering, the difference between potato and wheat starch becomes apparent. Potato starch gives a finish which is dry and hard, not brilliant, offers little resistance to creases and, if successfully calendered, makes trouble in stores, in packing, and in transportation, etc. It loses its first appearance much more quickly than a piece finished with wheat starch. If the goods are dried unequally by the action of the air, imperfections occur where potato starch is used. Dark colours suffer much with this starch, but much less with wheat starch.—*Journal de Teinture.*

### Commercial Failures.

According to *Kemp's Mercantile Gazette*, the number of failures in England and Wales gazetted during the four weeks ending Saturday, April 29th, was 300. The number in the corresponding four weeks of last year was 303, showing a decrease of 3, being a net decrease in 1890, to date, of 200. In addition to these gazetted failures, there were 282 Deeds of Arrangement filed at the Bills of Sale Office during the same four weeks. The number filed in the corresponding four weeks of last year was 309, showing a decrease of 27, being a net decrease in 1890, to date, of 44. The number of Bills of Sale published in England and Wales for the four weeks ending Saturday, April 28th, was 756. The number in the corresponding four weeks of last year was 866, showing a decrease of 110, being a net decrease in 1890, to date, of 540. The number published in Ireland for the same four weeks was 38. The number in the corresponding four weeks of last year was 43, showing a decrease of 10, being a net decrease in 1890, to date, of 47.

### ODDS AND ENDS.

The latest information from Calais describes a "feather" lace, which is designed with ostrich feathers in most graceful positions.

It is proposed to hold an exhibition of Russian-Asiatic produce and manufacture during the coming summer season in Moscow. The exhibition will be held in the historical museum of the city.

The cotton industry has been started at Colombo, Ceylon. Large quantities of cotton can be grown in various parts of Ceylon and brought cheaply to Colombo, where it is readily bought by the Ceylon Spinning and Weaving Company, Limited. The first cotton mills in the colony have been started near the capital, and 10,000 spindles and 150 looms are now working, or soon will be. Probably, before long, the present premises will be extended so as to include 20,000 spindles and 400 looms.

It would appear that the Southern States of America intend to manufacture more of their cotton. From a statement just officially issued, it seems that South Carolina had, in 1880, only 14 mills, whereas at the end of last year she had 44. Still, it will be long before it will be found profitable to manufacture there, for not only cotton but fuel is needed, as well as the skill to direct the operations.

As a result of the energetic efforts put forth by the promoters of the technical school scheme for Bolton, the institution promises to become an accomplished fact at no distant date. The sum of £2,000 has been fixed as the cost of the institution, and very liberal donations have been forthcoming towards defraying that expenditure, whilst the committee has made a further appeal to the Trades Council and to the Co-operative Society for increased aid.

The Indian cotton cultivation has increased with wonderful rapidity since 1874-5, the first year for which returns are available. In that year, the area producing cotton was 11,430,407 acres, twelve years later it had increased to 15,243,080 acres, though there was a great decline in the year 1887-8. In 1884-5 the quantity of cotton exported was only 867,560 cwt., whilst in 1888-9, it reached 5,331,904 cwt. Since the year 1864-5, the quantity of cotton consumed in the Indian cotton mills has increased from 60,000 bales to 888,654 bales.

One of the signs of the times is the tendency to carry the hosiery trade into districts outside the counties of Nottingham, Leicester, and Derby, which were formerly looked upon as the exclusive centre of hosiery manufacturing; now, however, thanks to the various knitting machines, a large number of manufacturers have commenced business in districts where, until very recently, hosiery manufacturing was unknown. This number has been increased during the past few weeks, several large concerns being about to commence business in the north country.





## ORIGINAL DESIGNS.

On our first page, we give a design for a Table Cover, suitable for tapestry, chenille, linen, or other material.

On our second is a design for a five-frame Brussels Carpet.

Our third pattern is for Silk Piece Goods. It is suitable for either dress silk or upholstery goods.



## MONTHLY TRADE REPORTS.

**WOOL.**—At the London wool sales a fair quantity of raw material has been sold, the chief demand being for the best descriptions. Cross-breeds have gone off well, and prices have kept up, with the exception of those for low and greasy kinds. The present series of sales closes on the 14th instant. In the worsted districts, business has only been quiet on the whole, colonial wools having sold below the average. The demand for English sorts has been fair, and prices for these have kept steady. The yarn branches have been moderately well employed where English wools have been used, but Botany kinds have been neglected. New orders have not been numerous, as they have been offered at lower rates, and spinners generally have refused any concessions. The manufacturing branches have kept fairly employed, with the exception of those engaged in making coatings, and in this department there has been but slight improvement during the month. The Eastern and American markets have been very quiet, orders having been scarce. Autumn fabrics have been inquired after moderately, but not much business has yet resulted.

**COTTON.**—The past month has, in most departments of this industry, been of a more satisfactory character than during the first three months of the year. The demand for yarn has applied to various counts and qualities, and for most markets—both home and foreign. Spinners have not had such an advantage in prices as they had a few weeks ago, and have grumbled much in consequence. Egyptian yarns, more particularly for manufacturing purposes, have been in better request. For China, Japan, and India, there has been much inquiry, and orders have come in freely. Both home and foreign houses have purchased cloth freely, and orders are now on hand to last for some weeks to come. For India, the demand has been rather large—mulls, dhooties, jaconets, and shirtings of various kinds have sold freely. Other countries have also shown a more than average demand. Prices generally are more in manufacturers' favour than for some time past.

**WOOLLEN.**—The call for worsted coatings and trouserings of a fancy character has been good, but for the plainer kinds there has only been a slight improvement on our last month's report. Serges have again improved in favour; the demand for them has been large, and opinions are general that this will be the favourite cloth for some time to come. They are now being made in admirable patterns as regards colour and design, and, in the matter of finish, there has recently been a decided advance. The mantling branches have been a shade quieter, and, in some districts, manufacturers are rather anxious for new orders; this applies more particularly to the lower qualities of goods. Tweeds, especially those adapted for the ready-made clothing trade, have met with an increased demand, and such has been the inquiry recently, that a further improvement is certain. Owing to the firm and confident tone of the London wool sales, prices of most descriptions of cloths have been steadier, in contrast to the position of a few weeks ago.

**LINEN.**—An improvement has been apparent in most branches of the linen trade, this being especially noticeable in the demand for blinds, sunshades, and fine fancy drills, for which there has been rather more than an average business done. In domestic cloths, there has been a fair trade, fabrics of a fancy nature meeting with more favour, although the plainer goods have sold moderately well. The hand-made linen branch still keeps very quiet, a state which seems to have become chronic. There are many complaints of low prices and keen competition.

**LACE.**—Trade in this branch is about as last month. The home demand has been rather under the average of this time of the year, and the same may be said of the Continent and America. The curtain branch has been fairly busy, and orders on hand are, on the whole, satisfactory. Fancy millinery laces have sold moderately, as have also bobbin nets. The better qualities of laces have recently been most in demand, whilst the commoner kinds have been so cut down in price that the production has been curtailed considerably. Manufacturers of hosiery have been well employed, and orders for merinos, cashmeres, &c., are numerous, but the makers of cotton goods have been rather quiet.

## New Dyes.

A series of chameleon colours, including red, purple, pink, brown, scarlet, maroon, orange, and yellow.

(MANCHESTER ANILINE COMPANY).

For 100lbs. Cotton (Yarn or Cloth).

**1ST BATH.**—Dissolve in 4 gallons of boiling water 5lbs. chameleon, 20lbs. common salt, and pour the solution into the dye-bath containing about 200 gallons water. Enter the cotton at boiling point, boil for 30 minutes, give several turns, lift and wash. (The bath can be renewed to its original strength by the addition of 2½lbs. chameleon).

**2ND BATH.**—cold—1lb. of nitrate of soda, 2lbs. sulphuric acid, 168° Tw. Turn continually for 15 minutes, take out, rinse in cold water, and enter at once into the

**3RD BATH OR DEVELOPING BATH,** which is made up, according to the colour required, as described below:—

Work the cotton in this bath cold for 30 minutes. Lift out, wash and dry, and the dyeing is completed.

**RED.**—Dissolve 1½lbs. red developer with equal weight of liquid caustic soda, 150° Tw., in 2 gallons of hot water.

**SCARLET AND ORANGE.**—These developers are dissolved in the same proportions as for red.

**PINK.**—Dissolve 1lb. developer in cold water with sufficient soda crystals to neutralize the bath. To brighten the shade, wash in boiling water, then in hot soap, and again in boiling water. Wring and dry. In dyeing this colour proportionately, less quantities of chameleon, nitrate of soda, and sulphuric acid are required than for the red.

**MAROON.**—Dissolve 15 to 20lbs. developer in hot water, and neutralize with soda ash.

**PURPLES.**—Dissolve 1½lb. developer in hot water, and proceed as for red.

**YELLOW AND BROWN.**—10lbs. of each of these developers are required for medium shades. With the brown a little hydrochloric acid should be used.

**MEM.**—The first and third bath can be kept for further use, but the second bath must be made up afresh every day. The dyeing processes must be carried through in quick succession.

**DIAMINE BLACK R O** (Leopold Cassella and Co.).—The great value of this dye is for mixing purposes. It can be combined with any other substantive dyes, especially our diamine colours, viz.:—Diamine red N O, diamine yellow, diamine blue B and 3 R, cotton brown A and N, and thioflavine S, in any required proportions, thus producing almost any shade on cotton in one bath and at a very small cost.

**COTTON.**—Dye boiling, adding 2 oz. of crystallized Glaubers' salt per gallon of water to the dye-bath; common salt, soda, potash, phosphate of soda, borax, or soap may likewise be used. By topping with a brilliant green in a cold bath, without any further addition, a dead black can be obtained, diamine black acting as a mordant for basic dye-stuffs, such as brilliant green, solid green, safranine, magenta, and thioflavine T. Dyeings done with diamine black R O are extremely fast to washing and light. Acid renders the shade bluer and brighter.

**SILK.**—Dye with addition of some acetic acid.

**SILK AND COTTON** (mixed) FABRICS dye like pure cotton. By using soap in the place of Glaubers' salt, the cotton takes up the dye-stuffs, the silk remaining undyed.

**WOOL AND COTTON** (mixed) FABRICS can be dyed in one bath by addition of Glaubers' salt, using diamine black R O for the cotton and our naphthylamine black D pat. for the wool in such proportions according as the fabric contains more or less of the two materials. If the dyeing is done in copper or tin vessels, care must be taken that the bath does not turn alkaline, owing to the simultaneous use of naphthylamine black D.

**PRINTING AND DISCHARGING.**—Zinc dust will discharge diamine black R O. For calico-printing, special directions are issued.

## American and British Trade Competition in Samoa.

The United States Vice-Consul at Apia, writing with regard to the imports of American and British cottons into Samoa, says:—The largest amount of cotton goods imported here is of British manufacture, the reason being that the principal trade is done by the British, and the only steam connexion we have is with British colonies. American cottons, however, are superior, and our prints especially are gaining favour every day, being the only goods of this class that can be guaranteed fast colours. The best quality of English prints cannot be relied on as fast in fancy colours; on the contrary, our cheapest grades invariably hold their dyes. The width of our ordinary prints used to be objected to, and the English goods were bought in preference because a little wider, but now the natives, being more civilized, look at quality instead of quantity. Common American print measures about 28 inches, while the same priced English goods measure about 32 inches. Again, there is a demand, which, however, is fast dying out, for a very cheap line of prints, usually purchased by the natives in whole pieces to be given away at feasts of different kinds. These goods, eventually, go to the outlying districts to the poorer classes in exchange for what they furnished the feast in the shape of produce. The water in which this stuff is washed for the first time might be used for paint. If the colours were only suitable, the consistency is there. This trade is a British monopoly, our manufacturers turning out nothing which will at all approach the inferiority of the material.



TABLE COVER.



WROUGHT IRON THROUGHOUT, RIM, ARMS & BOSS.

### Split or Solid.



The Lightest,  
Strongest,  
and  
Safest Pulley  
made.

卷之四

## Railway Foundry, LEEDS.

1870-1871



BRUSSELS CARPET.



THE JOURNAL OF FURANCE AND TEXTILE INDUSTRIES

THE MAY 1900



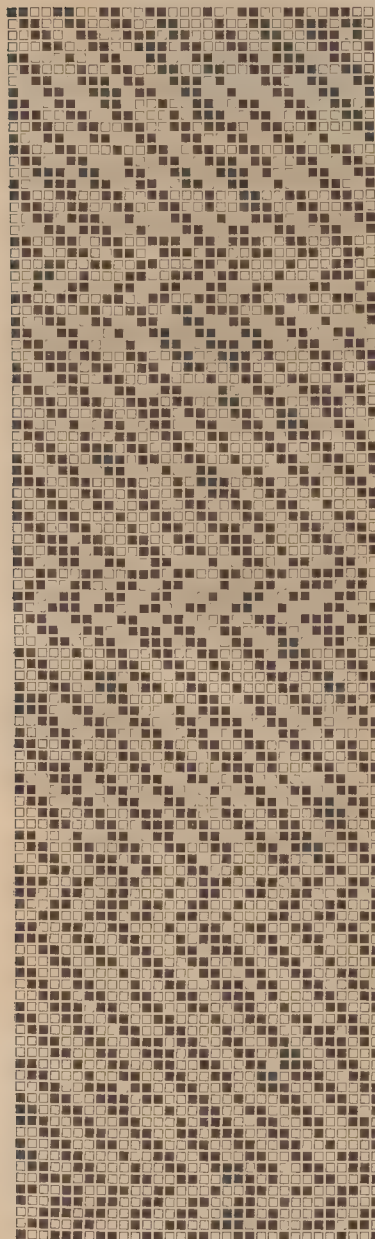
THE PIERCE DESIGN

## FASHIONABLE \* DESIGNS.

\* \* \* \* \* A Supplement, containing Woven Specimens of the Designs given on this page, is presented each month to those of our Subscribers who manufacture Cloth for Ladies' and Gentlemen's wear.

## Tweed Trousering.

No. 635.



2,500 ends in warp; 40 ends per inch;  
10's reed, 4 ends in a reed; 42 picks per inch;  
64 inches wide in loom; 56 inches wide when  
finished.

Weight 18 ozs.

Design.

Weft:—

Warp:—

1 pick Black and Brown twist, 14 skeins woollen.  
1 " Black, 20 " "  
1 " Black and Brown twist, 14 " "  
1 " Black, 20 " "  
23 " "  
17 skeins woollen.  
18 " "  
1 end Red and White twist, 17 " "  
9 ends White, 18 " "  
2 " Black and White twist, 12 " "  
10 " White, 18 " "

No. 636



Design.

## Tweed Suiting.

1,456 ends in warp; 22 ends per inch; 25  
picks per inch; 5½ reed, 4 ends in a reed; 64½  
inches wide in the loom; 56 inches wide when  
finished.

Weight 19½ ozs.

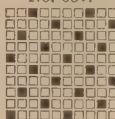
Ends.	Warp:—	Picks.	Weft:—
1 Mixture, 10 skeins	Twice	1 Mixture, 11 skeins	8 times.
1 Twist, 9 "		1 Twist, 9 "	
1 Blue, 10 "	Twice.	1 Blue, 11 "	Twice.
1 Twist, 9 "		1 Twist, 9 "	
1 Mixture, 10 "	Twice.	1 Blue, 11 "	Twice.
1 Twist, 9 "		1 Twist, 9 "	
1 Blue, 10 "	Twice.	1 Mixture, 11 "	Twice.
1 Twist, 9 "		1 Twist, 9 "	
1 Mixture, 10 "	Twice.	1 Blue, 11 "	Twice.
1 Twist, 9 "		1 Twist, 9 "	
1 Mixture, 10 "	8 times.	1 Mixture, 11 "	Twice.
1 Twist, 9 "		1 Twist, 9 "	
1 Blue, 10 "	Twice.	1 Blue, 11 "	Twice.
1 Twist, 9 "		1 Twist, 9 "	
1 Blue, 10 "	Twice.	1 Mixture, 11 "	Twice.
1 Twist, 9 "		1 Twist, 9 "	

52 ends in pattern.

52 picks in pattern.

## Worsted Trouserings.

No. 637.



Design.

Warp:—

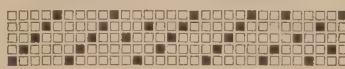
2 ends Twist, 2/30's.  
1 end Slate, 2/18's, } 5 times.  
1 " Brown, " "  
2 ends Twist, 2/30's.  
28 " Black, 2/48's.  
3 " Brown, " "  
29 " Black, " "

74 ends in pattern.

Weft:—10 skeins woollen.

5,000 ends in warp; 78 ends per inch; 9½ reed, 8 ends in  
a reed; 32 picks per inch; 64 inches wide in loom; 56 inches  
wide when finished. Weight 18½ ozs.

No. 638.



Design.

12 times.

Pegging Plan.

Warp:—

1 end Light Slate, 2/48's, } 4  
1 " Dark " " } times.  
1 " Light " " "  
16 ends Dark " " "  
4 " Twist, 2/40's.  
20 " Dark Slate, 2/48's.  
4 " Twist, 2/40's.  
16 " Dark Slate, 2/48's.  
1 end Light " " " } 4  
1 " Dark " " " } times.  
1 " Light " " " "  
9 ends Dark " " " "  
4 " Twist, 2/40's, } 4  
6 " Dark Slate, 2/48's, } times.  
4 " Twist, 2/40's.  
9 " Dark Slate, 2/48's.

5,040 ends in warp;  
78 ends per inch; 9½  
reed, 8 ends in a reed;  
36 picks per inch; 64  
inches wide in the loom;  
56 inches wide when  
finished.

Weight 19 ozs.

Weft, 10 skeins woollen.

Draft and Design are  
the same.

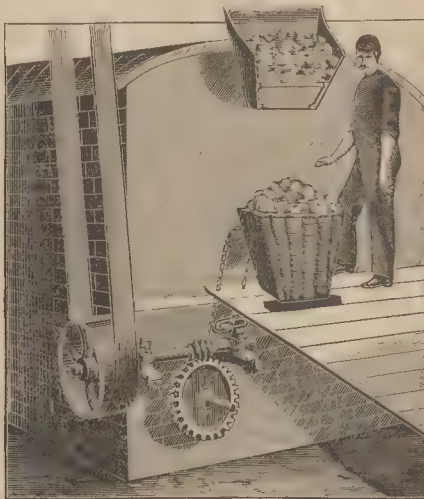
Ours was the first Journal in this country to give woven samples of  
various descriptions of fabrics regularly each month, and since we com-  
menced this feature, some years ago, it has, to some extent, been adopted  
by others. In matters connected with every branch of designing, we  
stand ahead of all other Journals.



## MACHINERY, &C. &

### The Patent Climax Carbonizing Machine Co., Ltd.

During the past two or three years, we have given descriptions of the carbonizing machines made by Mr. John Illingworth of White Lee, Batley, and such has been the success of his latest improved apparatus in practical operation that a limited liability Company has been formed for the purpose of making and pushing the sale of the machines. The shares have been taken up privately, and the Company is likely to be, within a short time, in full working order. Mr. Illingworth, who has been identified with the textile trade, as the largest flock manufacturer in the world, has devoted years of study to the bringing out of a machine for carbonizing that should be automatic in principle, effective in working, and economical as regards first and subsequent cost. In this object he has been eminently successful, and the pecuniary benefit to himself is likely to be satisfactory in the long run, although he has spent much money and time in his experiments during the last few years. Mr. Illingworth has been appointed managing director of the Company, and will be pleased to send all particulars and to afford an opportunity of the machine being seen working, on application at the registered office (either by letter or personally), White Lee, Batley. A few months ago, we gave a description of a new machine that had been erected at Batley, since which time further improvements have been made, and a



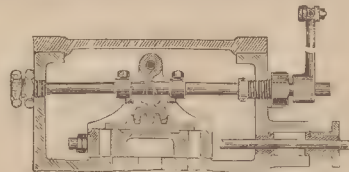
*The Patent Climax Carbonizing Machine.*

larger apparatus built, that is turning out more work in a given time than any one previously in operation. It is, of course, a great advantage, in destroying vegetable matter, such as jute, cotton, burrs, seeds, straw, &c., contained in wool, woollen waste, cloth, rags, or other fibre or fibrous goods, to have the work performed in a clean and expeditious manner. This the apparatus does effectively. The principle of the machine is automatic throughout—in the feed, in the internal working, and in the delivery, the work going on continuously, thereby securing regularity in quantity and quality of work done per hour. It has a positive feed-motion, so that the person in charge cannot affect it by irregularity of feeding. The working parts and general construction are as simple as possible, and their liability to get out of order has been reduced to a minimum, thereby avoiding costly repairs, the chief drawback in most carbonizing apparatus. Every part of the machine is easy of access, and can be removed and replaced with little trouble and expense. The waste heat from the retort is utilized for raising the temperature of the machine, thereby effecting a material saving in the cost of working over other machines, and the whole mechanism is enclosed in a brickwork chamber, so that the heat is thoroughly maintained. There is no loss by condensation. As a proof of their value, Mr. Illingworth recently showed us a testimonial received from Messrs. Valentin and Flipo, of Tourcoing, France, dated last month, in which they speak highly of the machine, and give an order for another.

### Patent Automatic Expansion Gear.

We have had our attention drawn to a new patent automatic expansion gear, made by Mr. T. Metcalfe, St. James' Ironworks, Bradford, which ensures a perfectly regular speed, and is particularly adapted for driving machinery with rapidly varying loads, and, further, it works with economy, there being a saving in the consumption of fuel. The illustration shows a sectional plan of the expansion gear, from which it will be noticed that the

main valve is of the ordinary type, worked by an eccentric from the fly wheel shaft, and fixed on the spindle by means of lock nuts at each end. On each side of the valve the brackets are cast. The cut-off valve consists of a flat raked plate on the back of the main valve. A toothed segment, which is actuated by two tappets on the spindle, is centred on the brackets, and gears accurately with the cut-off plate. The spindle receives an up and down motion by a lever which is attached to the governor. The two

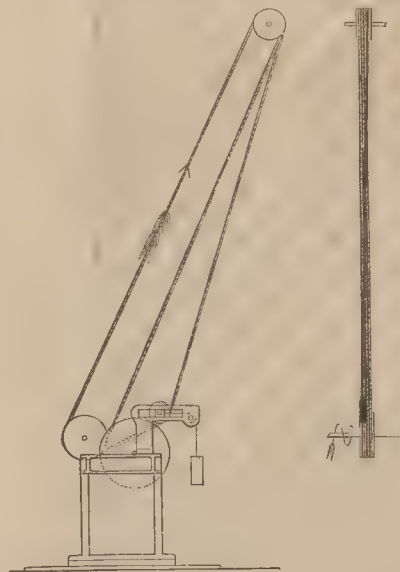


*Metcalfe's Patent Automatic Expansion Gear.*

tappets come against an inclined face on the toothed segment, and, as more or less steam is required, come against a larger or smaller face. The spindle can be adjusted by two brass screws, which also serve the purpose of a stuffing box and gland. The motion is actuated solely by the governor, thus doing away with the use of an eccentric and rod. This automatic expansion gear can be fitted to any engine and, there is no doubt, would satisfy users of such mechanisms. Any further particulars and prices can be had of Mr. Metcalfe, at the address here given.

### Improved Driving Ropes.

We are pleased to inform our readers that the long-talked of loss of power through rope driving has at last been overcome, and as this loss was very considerable, the improvement must be a great boon to any one having rope driving. As, of course, is well known, the old principle was to have one rope to one groove, and to have several ropes to one drive, and the difficulty was to get all the ropes on one drive of exactly the same diameter, as, when some were in the slightest degree less than others, they



*Improved Driving Ropes.*

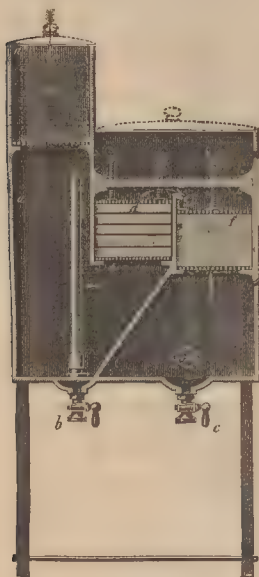
would fall deeper in the groove, and thus attempt to drive the driven pulley at a different speed from the others, but, as this was impossible, some used to slip, and thus put a brake on the pulley, hence, the waste of power. To obviate this difficulty, many devices have been brought out, amongst such has been a continuous rope wound spirally round the pulleys, but with a rigid tightener, which does not allow for any extra power that may be put on, or for any atmospheric changes, thus only partly remedying the evil. But Mr. Ratcliffe of Newton Moor has invented a system of a continuous rope, with an automatic tightener, which is very accommodating, as it requires no adjustment whatever after it is once started, the rope being always kept at one uniform tension throughout, by a weighted pulley, over which the slack side of the rope passes, which weight, of course, can be increased or diminished according to the power wished to be transmitted.

Anything more simple, yet more perfectly effective, cannot possibly be imagined, and we can only wonder why it has not been done long ago. We hear that several large cotton spinners are adopting it for vertical driving, and that Messrs. Crighton and Sons, Castlefield Ironworks, Manchester, are making the appliance for the drawing up of the carriage of the spinning mule, for which it has been found to save a continual expense in the breakage of wheels, and to need no extra attention.

### The "Diamond" Patent Oil Filter.

In innumerable factories, workshops, and places of business generally, where oils are used for lubricating and other purposes, much dirty, or refuse, oil is made, and large quantities are really wasted, for the simple reason that it is found to be of little practical value, owing to the want of suitable means or apparatus for bringing it back to such a state that it can be made useful. Of course, there are mechanisms in the market for the purpose of filtering refuse oils, which are of more or less value, but still it is surprising that their adoption is almost *nil*, even amongst some of the largest firms in this country, who either put the refuse oil to some other than its original purpose themselves, or dispose of it to those who do the same. Tradesmen who study economy, and this every one knows now-a-days

is essential to make a business successful, will look after saving in minor matters in their works, and one not unimportant item is the thorough utilising of the refuse, or what is termed waste oil, and to ensure this, they cannot do better than read the following description of the "Diamond" Patent Oil Filter, now being sold by Messrs. Woodhouse and Rawson, United, Limited, Cornbrook Telegraph Work, Manchester, and 88, Queen Victoria Street, London, E.C. This filter will cleanse, effectually, animal, vegetable, or mineral, oils and glycerine, no matter how much ordinary refuse they may contain, and it is guaranteed that it will, in a very short time, pay its cost by the saving that will be effected of much of the oil that is now wasted. The cost of maintaining it in good working order is trifling, as will be seen by reading the particulars of its mechanism. The filtering materials only require changing five or six times a year, and this can be done easily in a few minutes. From the engraving, it will be noticed that the filter consists of a series of chambers—A, A, D, F, and G. The practical working of the filter is carried out as follows:—The chambers, D and F, are filled with clean, unbleached, new cotton twist; this twist is compressed in these chambers, as required, by adjustable screws, H, so that there is no difficulty of filtering oil of any density. The refuse oil is put in at the top of the chamber, A, and it



The "Diamond" Patent Oil Filter.

falls through a sieve, B, which retains the coarser portions of dirt and refuse generally. Of course, the chamber, A, has to be nearly filled, and the filtering process goes on. The oil passes upwards through the chamber, D, and over the partition, E; drops into the chamber, F, and through the filtering material into the chamber, G, from whence it is drawn off for use, through the let-off cock, I, when required. The let-off cock, C, is for the purpose of drawing off the accumulation of water and fine refuse, only a small quantity of the latter being able to pass through the sieve, B. The filters are made in various sizes, according to requirements, to run from 6 to 112 lbs. a day, at prices that are merely nominal, when their advantages are taken into account. The above firm will be pleased to furnish all particulars on application.

### Mr. S. Brooks, Manchester

It would appear that business in the cotton machinery line is very brisk, numbers of orders have been given out of late, and there seems a disposition amongst many cotton spinners to replace their old machinery. The firm of Samuel Brooks of West Gorton and Miles Plattling is just now supplying a number of well known firms in connection with "Ring Spinning," and bids fair to obtain the same reputation for preparation machinery. Messrs. Eckersleys of Wigan gave Mr. Brooks, some two years ago, his first order of magnitude for preparation machinery, viz.:—the whole of the drawing, slubbing, intermediate, and roving (as well as ring), for their 60,000 spindle mill, and have since placed with them one or two repeat orders, the last one only a few days ago. Messrs. George Cheetham and Sons of Stalybridge, are also putting in the whole of the drawing frames to replace their old machines, as well as a quantity of slubbing frames from the above firm. The Bury and Elton Commercial Co. of Bury are renewing a number of their

drawing frames, and Messrs. Thomas Nuttall and Sons of Farnworth have recently put in a few more frames of the same make. In connection with the "Ring" system it need scarcely be said that the firm is exceedingly busy, and is at present supplying the following firms, viz.:—Messrs. Kershaw, Leese and Co. of Stockport, about 10,000 spindles, Mr. Eli Dyson of Farnworth, about 16,000 spindles, and Messrs. Swainson, Birley and Co. of Preston have also given a repetition order to the firm, having already many thousands of spindles at work made by them. In Scotland, Mr. Brooks is also supplying a quantity of spindles to the Lanark Spinning Co., Lanark, both for spinning and doubling, making nearly 15,000 spindles to this firm, and is also in the midst of an order for several thousand spindles for Messrs. A. and A. Galbraith of Glasgow.

### The Patent "Grip" Treads for Floors, &c.

A recently patented improvement for mats and coverings for floors of various kinds, and which is being put upon the market by The Safety Step Co., Limited of Exchange Buildings, 13, St. Mary's Gate, Manchester, should meet with attention from mill owners generally. Hitherto mats and coverings for mills have consisted of India rubber alone, but the "Grip" tread is a combination of metal and India rubber, and its usefulness in many respects for textile factories will be appreciated. The tread consists of a plate of metal, into which India rubber blocks are dove-tailed, these projecting above the surface of the plate. Each block is thoroughly supported and cannot become loose, for the simple reason that they are vulcanized in the plate, under great pressure, in the process of manufacture, forming practically a solid block of rubber. Of course, it is well known that slipping, when treading upon India rubber, is almost impossible, and it is to this fact that the tread owes its great value to those engaged in the various branches of the textile trades. In the first place, when employers take into account their liability, under the present Act of Parliament, for any accidents caused to their hands by a slight negligence in employing means to render otherwise dangerous machinery safe against casualties, they will recognise that it behoves them to protect themselves against loss by actions at law, and by the use of this tread upon spaces where there is danger to lessen considerably their risk; and, again, there are many parts of factories where mats or treads of this description would ensure an immunity from any accidents of any kind. In dye houses, bleach-works, and similar establishments, the use of these treads around vats, &c., would amply repay for the outlay, and the same might, with safety, be said of innumerable places where, at present, there is more or less liability during all working hours to mishaps. The treads can be made of any desired shape or pattern, and can be used for mats, floor coverings, steps of various shapes, and, in fact, for any purpose where a safe tread without slipping is essential. The prices of the treads are such as, to bring them in at a much lower rate than the India rubber treads now generally used, and full particulars and estimates can be had by applying to the above mentioned firm.

### Improved Mechanism for Weaving Bordered Carpets.

The invention has for its object improvements in the manufacture of bordered carpets, and in looms for the same. The way in which bordered carpets are now usually woven in breadths, under a former patent, is to weave, first, the bordered piece at one end of the breadth in an ordinary jacquard carpet loom, then to disengage and lift down the jacquard cards, next to bring up other cards and arrange these on the jacquard cylinder for use in weaving the body portion of the pattern. When this has been done, a like change has again to be made before the loom can weave the border at the other end of the length. These repeated changes involve so much labour that the cost of weaving is greatly enhanced. According to this invention, a loom is used with two or more jacquards, each with its own cards. Each jacquard is tied up with the figure warps of the fabric, and with which it is provided. The loom is supplied with mechanism for putting the jacquards into, and out of, work, and only one of the jacquards is in action at a time. In weaving bordered carpets with a loom so provided with two or more jacquards, all that is required in making the change from border to pattern, and *vice versa*, is to stop one jacquard and start another, and all the labour and loss of time involved in changing the cards is avoided.

One of the most important features of the silk schedule in the new tariff bill, presented by the majority of the Ways and Means Committee, is that providing for the payment of a bounty to American silk culturists.

According to Sir Charles Mills, Agent-General for the Cape of Good Hope, there is a chance for Yorkshiremen going out to the Cape, if they will go and found woollen factories. There is a great demand there for blankets, and the wool is sent from the Cape to this country; there are two or three profits on it besides that of the manufacturer, and then it goes back. All this cost might be saved to South Africa if they had the factories there. This would, no doubt, benefit the Yorkshiremen who went out, at the expense of the woollen manufacturers at home. But, then, Sir Charles Mills says that if Englishmen do not go and found these factories Germans will, so that it is better for Yorkshiremen to lose by other Yorkshiremen than by Germans.

M. Grandgeorge gives a statement of the quantities of cotton transformed each year by the French spinning mills, that is to say, the balance of the imports and exports of French cotton (annual average):—From 1847 to 1856, 65,100,000 kilos.; from 1857 to 1866, 74,800,000 kilos.; from 1867 to 1876, 86,000,000 kilos.; from 1877 to 1886, 98,700,000 kilos.; and from 1887 to 1888, 107,400,000 kilos.





### Edinburgh Exhibition.

The Edinburgh Exhibition, which was opened a few days ago, does not appear to possess particular features of interest to the textile trades, at which, however, we are not surprised, but to some others, notably the electrical industries, it will prove of the greatest interest. The machinery hall contains over two hundred exhibits in motion and standing; a few of these concern our readers, we, therefore, refer to them below. The railway court, with its various displays made by the South Eastern, North Eastern, Great Western, Great Northern, Caledonian, and London and North-Western Railway Companies will, no doubt, prove very attractive. The north court contains over one hundred and twenty exhibits, which embrace a variety of goods, including furniture. The west court has about two hundred and eighty exhibitors, many of them being of textile goods, which we also mention below. The east court consists of the Italian, Austrian, Russian, Belgian, French, German, and Oriental sections. There are also spaces devoted to the Artisan section, and to the Women's industries section. In these there are over four hundred and fifty exhibitors, so that this department will not be the least taking of the various sections into which the exhibition is divided. The following exhibits will be most interesting to our readers.

#### MACHINERY, &c.

MESSRS. ROBEY AND CO., Globe Works, Lincoln, are showing engines which drive the dynamos for the whole of the arc lamps used in lighting the exhibition buildings and grounds. They consist of the following:—Coupled compound horizontal engine, capable of working up to 350 horse-power; fitted with Richardson's and Rowland's patent automatic trip expansion gear and governor, for securing the utmost economy in steam and regularity in running; cylinders  $18\frac{1}{2}$  and 30 ins.; dia. 40 ins.; stroke, 65 revolutions per minute; fly-wheel, 15 feet dia.; grooved, for 12 ropes  $1\frac{1}{2}$  in. dia. Compound horizontal engine, capable of working up to 260 horse-power; also fitted with trip expansion gear and governor; cylinders, 15 and 26 ins. dia.; stroke, 86 revolutions per minute; fly-wheel, 12 feet dia.; grooved for 9 ropes  $1\frac{1}{2}$  ins. 25 horse-power (nominal) compound "Robey" fixed engine, capable of working up to 100 horse-power; cylinders, 9 and 16 $\frac{1}{2}$  ins. dia.; 18 ins. stroke; 143 revolutions per minute; fly-wheel, 8 feet dia. x 12 $\frac{1}{2}$  ins.; fitted with Richardson's patent automatic governor and link expansion gear. High speed compound horizontal engine, capable of working up to 28 horse-power; cylinders, 5 $\frac{1}{2}$  and 9 ins. dia. x 6 ins. stroke; fly-wheel, 3 feet 6 ins. dia.; 300 revolutions per minute. Two, each 8 horse-power (nominal) vertical engines, capable of working up to 32 horse-power, coupled with fly-wheel 7 feet dia. in centre (between engines); cylinders, 9 $\frac{1}{2}$  ins., dia. 12 ins.; stroke, 135 revolutions per minute; fitted with Richardson's automatic governor and cut-off gear. One high-speed vertical engine, capable of working up to 44 horse-power; cylinder, 10 $\frac{1}{2}$  ins., dia. 10 ins.; stroke, 285 revolutions per minute; fly-wheel, 4 feet 6 ins. dia. The foregoing engines are at work driving the dynamos for all the arc lamps used in lighting the exhibition buildings and grounds.

MESSRS. WOODHOUSE AND RAWSON, UNITED, LIMITED, 88, Queen Victoria Street, London; Cornbrook Telegraph Works, Manchester; 41, Piccadilly, Bradford.—High candle-power incandescent lamps illuminating band stand. Commander Scott's electric flash signalling lantern. Photometrical apparatus, including holophotometer. Harcourt's pentane standard lamp No. 2, and apparatus illustrating a method of equalizing by means of rotating discs and mechanical oscillation. Barber Starkey's accumulator cut-out. Electrical tachometers Wirt's voltmeter and rheostat. Wire testing apparatus. Samples of new insulating material for switch bases, etc. The Cornbrook arc lamp. Electric tolling bells. Various assortment of railway and post office telegraphic instruments, electric light switches, bells, indicators, etc. Also the Cunyngnam, Woodhouse and Rawson magnetic cut-out electric Launches, etc., etc.

MESSRS. J. E. H. ANDREWS AND CO., LIMITED, Reddish, near Stockport.—One pair 16 horse-power nominal double-acting tube firing "Stockport" patent gas engines, each obtaining two impulses every revolution. One 3 horse-power tube firing "Stockport" patent gas engine and dynamo combined, driving the dynamo from fly-wheel of the engine. One 6 horse-power nominal "Stockport" patent gas engine, and one 1 horse-power vertical "Stockport" patent gas engine.

MESSRS. LANCASTER AND TONG, Lancaster Works, Pendleton, Manchester.—The whole of the steam traps working in the Exhibition are the "Lancaster" patent high pressure traps, and all the pedestals driving the line shafting are the "Lancaster" patent adjustable pedestals. Both are exclusively manufactured by this firm.

MESSRS. GALLOWAYS, LIMITED, Manchester, are showing five of their well known Galloway boilers, each 30 feet by 8 feet. These are supplying the whole of the steam required in the exhibition, and are to be seen in the boiler-house, situated at the north-west of the machinery hall.

MR. WILSON HARTNELL, Volt Works, Benson's Buildings, Park Row, Leeds.—One dynamo about 1 ton, driven by 6 horse-power engine, with Hartnell's governor. One dynamo about 13 cwt. One switchboard about 3 cwt. One model of electric crane. Sundry lamps and fittings, etc.

THE ROSSENDALE BELTING CO., 10, West Mosley Street, Manchester.—Woven hair belting with patent edge; sewn cotton belting; patent carrying belts specially prepared for collieries, dredgers, etc.; elevator belts for corn mills; patent traces.

MR. J. H. SUTCLIFFE, Globe Works, Blackburn.—Patent buffer bottom card on silver cans.

#### TEXTILE FABRICS, &c.

MESSRS. ROBERTSON, LEDLIE, FERGUSON AND CO., LIMITED, The Bank Buildings, Belfast.—10/4 damask loom weaving snow white bleach brand double damask table cloths. Hemstitching machine at work. Embroidery machine at work. Irish peasant girls in costume work these machines. Specimens of the growth and handling of flax from the seed to the loom, and from the loom to the bleach green, from the bleach green to the linen storeroom of the housekeeper. Also satin finished double damask table cloths, 3 $\frac{1}{2}$  yards square, and napkin to match, manufactured for Her Majesty.

MESSRS. ROBINSON AND CLEAVER, Dougall Place, and Dougall Square, North, Belfast.—Irish linen table damask. Household Linens. Linen, cambric, and cotton handkerchiefs, plain, embroidered, and printed. Irish poplin, laces, embroideries, hosiery, down quilts, shirts, collars and cuffs, &c. Flax in its different stages of manufacture. Damask hand looms, hemstitching, and other hand machines.

MESSRS. A. AND J. MACNAUGHTON, Filochry, N.B.—The Pitlochry tweeds and Cheviots, Saxones, and homespun, for suits, ulsters, and ladies' gowns; the specimens being cut from stock available for 1890. The Pitlochry travelling rugs and plaids in Cheviots, Saxony, and vicuna; solid and reversible. Specimens of home-made woollen goods as produced from grower's own wool.

MESSRS. LAURENSEN AND CO., North End, Lerwick, Shetland Isles.—Hand-knitted Shetland wool shawls, wraps, handkerchiefs, plaids, comforters, veils, neckties, scarfs, and clouds. Cardigan jackets, jerseys, guernseys, gloves, mitts. Hosiery and underclothing of all descriptions. Hand-woven Shetland home spun. Fair Isle hosiery.

MESSRS. ROMANES AND PATERSON, 61 and 62, Princes Street, Edinburgh.—Scottish woollen textile manufactures. Real homespun tweeds from Sutherlandshire and the Islands of Harris, Shetland, and St. Kilda. Fine Cheviot and angola tweeds for ladies' and gentlemen's wear. Tartan rugs, plaids, and shawls, in home-grown, colonial, and the Peruvian vicuna wools.

MESSRS. JOHN WHITE AND CO., The Shetland Warehouse, 10, Frederick Street, Edinburgh.—Shetland wool manufactures, comprising lace shawls, veils, scarfs and ties; warm wrap shawls; clouds, hosiery and underclothing—all hand-knitted by the women of Shetland. Specimens of Shetland undyed home-spun tweeds. Fair Isle wool manufactures.

MESSRS. SWAINSON, BIRLEY AND CO., Fishwick Mills, Preston, Lancashire; 7, Charlotte Street, Manchester; 5, Goldsmith Street, London; 9, Princes Square, Glasgow.—Long cloths, mediums, shirtings, plain and fancy costume cloths, satens, muslins, brocades, &c.

MESSRS. HENDERSON AND ADAM, 33, Hanover Street, Edinburgh. N.B.—Upholstery and dress trimmings manufactures, comprising fringes, cords, gimps, tassels, fuchas, buttons, ornaments, &c. Specimens of flags and banners for trades, societies, &c.

MR. CORMICK CANNON, The Glenties, Co. Donegal, Ireland.—Donegal home-spun and hand-made tweeds and friezes (guaranteed pure wool), made from natural colours, and cottage industry dyed colours.

MESSRS. WM. BLISS AND SON, Chipping Norton, Oxon.—Tweeds, shawls, travelling maids, rugs, vestings, linings, saddlers' woollens; military, naval, engineers', and other serges.

THE TEXTILE SYNDICAL CO., 5, Copthall Buildings, London, E.C.—Vegetable wool cards and combings. Samples of which we have given in our Journal.

MESSRS. WHITE, BURNS AND CO., Bonnington, Edinburgh.—Various kinds of home and foreign pulled skin and fleece wools.

MR. WILLIAM BUCKLEY, Gateshead Mill, Delph., near Oldham.—Reversible, &c., shawls. Cloak and ulster cloths.

MESSRS. ROBERT LEGGET AND SON, Water of Leith, Edinburgh.—Home and foreign skin, wools and rugs.

MR. DICEY THOMPSON, 4, Milk Street Buildings, London.—Irish and linen handkerchiefs and embroideries, &c.

MESSRS. T. O. SULLIVAN AND CO., The Square, Kenmare, Kerry, Ireland.—Kenmare home-spun undyed tweed.

MR. THOMAS COOMBS, 8, High Street, and 59, Midland Road, Bedford.—Three lace-workers.

### The Fixation of Alumina Mordants.

#### COTTON, LINEN, ETC.

An alumina mordant is the base for numerous dyeing operations. In fact, most of the natural colouring matters yield their fundamental colour with alumina. If cotton is introduced into a solution of an alumina salt, it draws to itself a quantity of the salt larger than that evenly in solution in the liquid, but the alumina is not fixed upon the fibre as when wool or silk is mordanted, and a single washing will remove it. If, instead of washing the cotton, it is wrung and brought into a solution capable of forming an insoluble combination of alumina, this compound will be precipitated upon the fibre which is thus mordanted, but this method does not fix the alumina upon the cotton in a sufficiently intimate manner, and the colours dyed upon such a mordant are not fast enough. This lack of fastness is due to the physical condition of the alumina. It is evident that alumina fixed in this way occupies a relatively considerable volume, and is not entirely held by the pores of the cotton, much of it is upon the surface. Such a colour as alizarine, for example, which requires, after its combination with alumina, such operations as soaping, hard washing, &c., cannot be fixed by this

method. On the other hand, certain colouring matters, without any affinity for cotton, such as the ponceus, the oranges, &c., can be fixed in this manner, and give relatively fast shades which, however, wash badly. Alumina plays, in this case, the part of a mechanical mordant; it draws the colouring matter, by its porosity, from the bath, and, drying, contracts and holds the colour. The mordant used for this purpose is the so-called basic alum, obtained by saturating ordinary alum solution with soda crystals solution, just to the point where a permanent precipitate appears. The salt used for precipitating the alumina is stannate of soda. Good results can also be obtained by saturating the cotton with alum solution, and then passing it through aluminate of soda. Alumina is thus precipitated both as base and acid, and forms a sort of aluminate of alumina. In printing steam colours upon cotton, acetate of alumina is mixed with the colouring matter, products designed to impart the special qualities to the colour added, such as lime salts, tin salts, oils, &c., and the goods are steamed. The acetate of alumina is decomposed, an alumina lake is formed little by little, which unites to the fibre as soon as it is formed, and fixes the colour. Often, alumina mordants designed to be dyed are printed, fixed, and dyed, with different natural and artificial colouring matters, such as madder, &c. For this purpose, acetate of alumina is thickened with gum, starch, dextrine, or any other appropriate thickening. The strength of the mordant is regulated according to the depth of shade to be obtained by the dyeing. The printed piece is dried, hung for two or three days in a room heated from 86° to 95°F, and in which a constant degree of humidity is maintained by steam jets, or by frequent sprinkling. For some years, a rapid mode of fixing alumina mordants has been used; the pieces have simply been passed through a box, the bottom of which contained ammonia water. The ammonia vapours decompose the alumina salt, setting the alumina free; the process is then like that following ageing. The alumina, when it comes from the fixing baths, is neither perfectly insoluble nor completely fixed upon the fibre; therefore, before dyeing, it must be washed with warm water and well rinsed to remove the thickening and the soluble substances which are not further needed. If it is simply washed in water, a part of the mordant is removed, the shade will be scant and uneven, and the whites will be affected, as a certain quantity of the mordant which is removed will attach itself to the whites. This is true of acetate of alumina prepared by the partial double decomposition of alum by acetate of lead, and which contains free alum. Alum is not decomposed by ageing; it remains mixed with the hydrate of alumina formed by the decomposition of the acetate. When it is dissolved in water, it removes part of the alumina already fixed, and this corrosion is very irregular and causes uneven shades. Therefore, water must be replaced by a suitable bath which will complete the combination of the alumina with the fibre, remove the uncombined mordant which is held mechanically by the thickening, and prevent, at the same time, the mordant from becoming fixed upon the whites. The substance best adapted to accomplish all these purposes is cow-dung; it suffices to pass the goods mordanted with alumina or iron through a warm bath containing from one to four per cent. of dung to obtain the desired result.

#### WOOL.

Wool is very easily mordanted with alumina mordants. The only alumina salts employed are the sulphate and alum. If wool is boiled in an alum solution, it takes up, little by little, the alumina, and subsequent washings will not remove it completely. This process of fixation, however, does not give good results. The addition of tartar (the acid tartrate of potash) appears to be indispensable, if lively and fast shades are to be obtained. According to the shade, it is possible to employ crude tartar, tartar crystals, or cream of tartar. For the sake of economy, the tartar is sometimes replaced by sulphate or bi-sulphate of soda, but the results are not as satisfactory. The weight of tartar should be one-third the weight of the alum or sulphate of alumina. It is probable that tartrate of alumina is formed during the process; this is less soluble than the sulphate, and is dissociated in the presence of the wool. Wool mordanted by boiling for two hours with alum and tartar ought not to be washed immediately; it is well to keep it for some days in a moist dark place, where the mordant will combine more intimately with the fibre. The shades obtained on wool thus left are fuller and faster than those dyed on wool washed as soon as it is mordanted.

#### SILK.

Silk can be mordanted by alum at a boil like wool, but, in most cases, simple working in the cold is sufficient to fix the alumina. For alizarine reds, for example, the silk is given several turns in an alum solution, left in the bath over night, and washed the next morning. It does not do any good to add tartar to the alum.—*Teinturier Pratique*.

The Silk Exhibition, which was opened last Tuesday in the ball-room of the residence of Lady Egerton of Tatton, will, no doubt, do something towards helping the silk industry of this country. We cannot see why £11,000,000 of English money should be spent on foreign silk fabrics annually. Lady Egerton, and the ladies working with her, have cause to be gratified at the display which they have been able to get together. The Macclesfield firms, who have sent exhibits, are Messrs. Kershaw and Swindells, Mr. J. O. Nicholson. The Silk Manufacturing Society, Mr. Stamford, and Messrs. J. Birchenough and Sons, whose fabrics are shown by Messrs. Collinson and Loch, London. Messrs. Warner and Ramm, London, are also exhibiting.



### Personal and Trade Notes.

A new company has been registered under the title of William Hollins and Co., Limited, Nottingham, with a capital of £300,000 in £10 shares.

Mr. Caleb Duckworth has taken the Victoria Mill, Colne, and will not only have the place thoroughly repaired but will make it some additions.

The late Mr. James Ormrod of Hallwell Lodge, Bolton, has bequeathed to the Infirmary of that town £1,000, and the same sum for the repair of the fabric of the Parish Church of Bolton.

The trustees of the late Mr. George Heginbottom have offered £10,000 to build a technical school and free library for Ashton-under-Lyne, the Corporation of which town have accepted the gift.

Mr. W. Crabtree, manufacturer, Addingham, Yorkshire, a native of Colne, has taken over the factory known as the Standroyd Mill, formerly run by Messrs. Hartley Bros. and Co., of Colne.

A company, in which several Belfast spinners are interested, has been formed for extending the flax spinning and weaving industry to the South of Ireland. A large factory is soon to be opened in Cork.

The Bursall Cotton Spinning Co., Ltd., has been registered to take over the business lately carried on by J. Milne of Dean Mill, Bursall, near Rochdale. The capital, £20,000, is subscribed in £50 shares.

Messrs. William Turner and Thomas Rutherford have purchased the hosiery manufacturing business lately carried on by Mr. Samuel Fingland, at Hawick. The style of the firm will be Messrs. Turner, Rutherford and Co.

The Burnley Lane Self Help Manufacturing Co.'s Mill has been bought by Mr. John Whitehead of Briercliffe Road for £42,000. The mill contains 600 new looms, with winding frames, tapping, and all other preparation machinery.

The Belfast linen merchants have formed an association to render opposition to legislation so hostile to the trade as the new American Tariff Bill. Mr. Biddle, of Messrs. James Scott and Sons, is the chairman of the new association.

The Canal Mills Co., Clayton-le-Moors, has been registered as a Limited Company, with a capital of £50,000, in £10 shares, to carry on business as cotton spinners and manufacturers, and to acquire the undertaking of the Canal Mills Co.

A new company, styled the Severn Tweed Company, Limited, has been formed, with a capital of £150,000, to acquire the Cambrian Mills, Newtown, Montgomeryshire, and other property belonging to the Severn Tweed Co., Limited, now in liquidation.

The manufacturers of woollens in the Kilmarnock district are busy just now. One mill has had a splendid run for six months for the best indigo Scotch coating serges, which are looked after by first-class houses. Serges are to be fashionable this season in black, blues, and greys.

A Limited Company, under the title of the Foulbridge New Shed Company, has been registered, with a capital of £15,000 in £10 shares, to purchase land at Foulbridge for the erection of mills and other buildings in which will be carried on the business of cotton and worsted spinning.

An illuminated congratulatory address was recently presented to Mr. John Humphries, of the firm of Messrs. John Humphries and Sons, carpet manufacturers of Kidderminster, on his recent recovery from the effects of a carriage accident, which occurred in October of last year, and which, it was feared for some time, would cause his death.

Mr. Alfred Aykroyd, a partner in the firm of Messrs. Aykroyd and Co., of Oakwood Dyeworks, Bradford, a well-known and esteemed citizen, died suddenly at his residence, on April 18th, at the age of 49. The deceased was a Justice of the Peace for the Borough, and an influential Wesleyan Methodist, and Conservative.

The death of Mr. George Firth of Bradford took place on the 17th ultimo. The deceased was principal partner of the firm of Messrs. Firth, Booth, and Co., stuff merchants of that town. He was a member of the Borough bench of magistrates, and one of the directors of the Bradford Commercial Banking Co. In religion he was a Churchman, and in politics a Conservative.

At the technical College, Bradford, a presentation was made, on the 11th ultimo, to Sir Henry Mitchell, of the firm of A. and S. Henry and Co., Limited, by the employees at their Bradford establishment, in recognition of his munificence in distributing shares amongst them to the value of £5000. The testimonial consisted of a beautiful silver casket containing an illuminated address.

The firm of Messrs. Andrews and Preece has been registered as a Limited Company, with a capital of £25,000, in £10 shares, to take over the business of electrical engineers carried on by Thomas Reginald Andrews and Thomas Preece, at the Borough Mills, Bradford, Yorks. 300 of the shares are deferred shares to rank for dividend after 6 per cent. has been paid on the ordinary shares.

Gilroy, Sons and Co., Limited, is a new company, with a share capital of £300,000, divided into 17,500 ordinary shares of £10 each, to be taken up by the vendors, and 12,500 six per cent. cumulative preference shares of £10 each. There are also debentures for £100,000, bearing five per cent. interest, and repayable at the end of 12 years from Whit-Sunday, 1890. The company is stated to have been formed for the purpose of acquiring and carrying on the business of Messrs. Gilroy, Sons and Co., jute spinners and manufacturers, Tay Works, Dundee.



## PATENTS.

### Applications for Letters Patent.

Alarms (mill). S. Helms, London.	19th Apl.	5,888	Letting-off motion for terry, &c., looms. J. Walker and G. Lowe, London.	23rd Apl.	6,142
Belts (splicing or joining). H. Bower, Bradford.	25th Mar.	4,616	Loom pickers. I. N. Ainsworth, London.	24th Apl.	6,229
Bobbins (rotating) on ring frames. T. Wrigley, Manchester.	27th Mar.	4,779	Looms (loose-read). J. Gregson, Preston.	25th Apl.	6,289
Bobbins. A. N. M. Ohlsson, London.	28th Mar.	4,886	Mules (backing off motion). J. T. Ainsworth, Manchester.	25th Mar.	1,611
Bleaching fibrous material. C. Kellner, London.	1st Apl.	5,054	Mules (self-acting). W. E. Dixon, London.	29th Mar.	4,923
Bale covering. J. M. Thompson, Liverpool.	3rd Apl.	5,178	Mules (loose-read). J. Nelson and S. Shaw, London.	8th Apl.	5,308
Belts and bands (joining). I. Jackson, Manchester.	3rd Apl.	5,185	Opening, cleaning and scutching cotton, &c. J. Taker and L. Hargreaves, Halifax.	10th Apl.	5,449
Boxes, &c. for pile fabrics, &c. G. Gilmore, Glasgow.	5th Apl.	5,261	Operating the shuttle drop box of looms. J. Bentley, Bradford.	25th Apl.	6,304
Bleaching vegetable fibres. C. Kellner, London.	5th Apl.	5,285	Pile or fur of chenille (expanding). E. Smith, London.	29th Mar.	4,955
Belting. J. K. Tullis, Glasgow.	23rd Apl.	6,149	Printing cotton, blankets, &c. W. Dorrington, London.	3rd Apl.	5,190
Belting. J. Blackwood, Glasgow.	23rd Apl.	6,169	Pulleys (split). A. Shardlow, Sheffield.	5th Apl.	6,281
Bleaching fabrics (liquid for). S. Stepanow, London.	23rd Apl.	6,202	Picking mechanism of looms. J. Sutcliffe, Glasgow.	14th Apl.	5,625
Calico printing. J. Thomson, Manchester.	24th Mar.	4,564	Pickers. J. C. Mewburn, London.	15th Apl.	5,714
Carding engines (grinding flats). G. Shepherd and H. Midgley, Manchester.	24th Mar.	4,573	Pressing travelling fleeces of wool, &c. I. Singer and M. W. Judell, London.	25th Apl.	6,344
Combing machines. J. Longmore and W. L. Watson, London.	25th Mar.	4,882	Reeling yarn. T. Guest and T. Brookes, Manchester.	5th Apl.	5,244
Carpets, rugs, and other looped or pile fabrics. G. Marchetti and H. N. Mellor, London.	3rd Apl.	5,210	Rugs and mats. W. M. Black, Glasgow.	5th Apl.	5,252
Cleaning and separating cotton from cotton seed. J. Saleha, London.	5th Apl.	5,271	Regulating the delivery of warp threads of weaving and knitting machines. S. H. Cole, W. S. Dobson, D. de Mozzilly and J. T. H. Richardson, London.	11th Apl.	5,541
Carding engines. W. Walton, Manchester.	12th Apl.	5,551	Ramie (treatment of). A. H. Norman, London.	22nd Apl.	6,127
Combining lace figurings or spottings with net. S. G. Packer, London.	17th Apl.	5,867	Re-blocking cloth. A. J. Boul, London.	22nd Apl.	6,170
Calico printing machines. W. Turnbull, W. Stockdale and J. Carr, Manchester.	19th Apl.	5,908	Shuttles. D. Berry and C. Shuttleworth, Keighley.	28th Mar.	4,853
Cutting and perforating textile fabrics. J. J. Story, London.	22nd Apl.	6,057	Singles (preventing) in preparing, spinning, &c. W. Nield, Manchester.	27th Mar.	4,772
Dyeing yarns. A. J. Boul, London.	25th Mar.	4,683	Spinning machines. G. F. Redfern, London.	29th Mar.	4,961
Dyeing, bleaching, &c. yarn and thread in cops, &c. W. E. Heys, Manchester.	28th Mar.	4,854	Scutching and rippling flax, &c. T. Adair, Belfast.	8th Apl.	5,289
Dyeing, &c., textile materials in cops and bobbins. W. E. Heys, Manchester.	9th Apl.	5,385	Scutching or hackling (holder for material). J. Black, Ballymena.	8th Apl.	5,301
Drying, cleaning, &c. wool. W. P. Thompson, Liverpool.	9th Apl.	5,413	Spinning machines (lifting pokers and ring rails). S. Tweedale, Halifax.	10th Apl.	5,450
Decorating ramie, &c. C. L. Field, London.	11th Apl.	5,532	Shuttles. J. F. Livesey, Manchester.	14th Apl.	5,605
Doffing indicators for spinning mules. A. Brearley, London.	15th Apl.	5,675	Spinning. J. Longmore and W. L. Watson, Liverpool.	15th Apl.	5,709, 5,711 & 5,712
Doubling, finishing, and folding textile fabrics. J. H. Riley, Manchester.	19th Apl.	5,879	Selva motions of looms. C. Whalley, Halifax.	16th Apl.	5,749
Drawing and combing fibrous materials. E. De Pass, London.	22nd Apl.	6,110	Shuttles. W. Roche and W. Prosser, Manchester.	16th Apl.	5,762
Extracting carbonized burr from woollen cloth. C. Womack, Barnsley.	16th Apl.	5,828	Silver and other cans. D. Hall and J. H. Kay, Manchester.	17th Apl.	5,816
Embroidery machines. F. J. Perry, London.	19th Apl.	5,930	Shuttles. J. and B. Thompson, Manchester.	19th Apl.	5,886
Fabric (art-cloth). F. Doble and B. Killburn, London.	25th Mar.	4,628	Spinning, doubling, twisting, winding, yarns, or threads, and apparatus. W. Golding, Manchester.	19th Apl.	5,887
Fire extinguisher. A. Barraclough, Heckmondwike.	28th Mar.	4,865	Self-acting mules (snarling motion for). W. H. Kershaw, Halifax.	22nd Apl.	6,067
Flyers used in spinning. T. Watson, Belfast.	28th Mar.	4,871	Spindle bolsters for ring frames. I. Walsh, Manchester.	24th Apl.	6,226
Fibres—machinery for removing filaments from fibrous leaves and stems. T. Burrows, London.	29th Mar.	4,958	Twisting, &c. strands, threads, &c. J. W. Deans and A. M. Foster, London.	31st Mar.	5,022
Flyers. A. Philburn, Ashton-under-Lyne.	1st Apl.	5,033	Trimming, guiding, or folding, hosiery and other soft fabrics. C. Cresswell, Nottingham.	16th Mar.	5,739
Fabric—sun and heat proof. G. Mitchell and J. Menzies, London.	1st Apl.	5,059	Twist-lace machines. H. Redgate, London.	24th Mar.	6,281
Flyers. R. H. Reade and H. McKibbin, Halifax.	1st Apl.	5,103	Temple mountings for weaving. J. Bentley, Bradford.	25th Mar.	6,303
Fulling machines. H. Grosselin, London.	8th Apl.	5,339	Winding yarn, &c. R. Unger, London.	31st Mar.	5,009
Fibrous material from slag, &c. C. Wood, London.	16th Apl.	5,847	Washing and scouring wool, &c., containing grease. G. W. Arnott, P. A. Olivier and G. Seagrave, London.	10th Apl.	5,482
Finishing fabrics. J. Kirk and B. Lee, London.	24th Apl.	6,258	Winding, carding, or folding, ribbons, trimmings, lace, &c. H. Marley, London.	16th Apl.	5,784
Giving motion to hackles of hackling machines. H. Sloan, London.	25th Apl.	6,351	Winding cotton and silk yarns on bobbins in gassing frames, and bobbins therefor. B. Wadsworth and D. Fairbank, Halifax.	19th Apl.	5,871
Harness and head wires (loom). G. Wright, Bradford.	19th Apl.	5,869	Winding machines. R. and J. Harling and F. Hebdon, London.	24th Apl.	6,250
Indigo mixed with certain substances for commercial and industrial purposes. W. Hay, W. M. Alexander and E. Bentz, Manchester.	29th Mar.	4,930	Warps (making). W. T. Glover and W. E. San Garde, Manchester.	24th Apl.	6,250
Jacquard machines (uprights of). I. Thomas and M. and J. Priestley, Bradford.	27th Mar.	4,787	Washing, scouring, and bleaching, fibrous materials. R. Harrison, Oldham.	25th Apl.	6,315
Jacquard apparatus for figured fabrics. B. J. B. Mills, London.	5th Apl.	5,256			
Jacquard apparatus for looms. F. Barker, London.	11th Apl.	5,504			
Jacquard cards or pattern plates therefor. J. Hall, S. Whittaker, and T. H. Fallows, London.	15th Apl.	5,708			
Jacquard machines. A. S. Crossley and C. Holden, Manchester.	23rd Apl.	6,146			
Looms. J. Weir, Belfast.	28th Mar.	4,870			
Looms for figured goods. W. T. Birchenough, Manchester.	1st Apl.	5,123			

### Patents Sealed.

935	2,112	2,804	2,712	2,878	3,048	3,441	3,751
4,458	4,516	4,578	1,593	4,613	4,777	4,795	4,834
4,928	18,035	18,956	2,360	3,233	4,455	4,662	4,991
5,549	5,776	20,715	4,451	4,757	5,128	5,362	5,410
5,455	5,604	5,690	5,884	14,655	18,971	20,693	5,569
5,629	6,040	6,868	9,671	14,775	16,190	20,936	293
346	7,969	3,236	3,399	3,983	4,744	5,459	5,814
6,243	6,289	6,290	6,329	6,485	9,600	10,846	12,208
							19,001

# The Journal of Fabrics AND Textile Industries.

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## Notices.

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## Regulations respecting Commercial Travellers in European Countries and in the Colonial and other Possessions of the United Kingdom.

(Continued from page 50).

**SERVIA.**—Commercial travellers must be provided with a document in accordance with a stipulated form (which, in order to avoid delay at the frontier, should be drawn up or accompanied by a translation in the German language), as, if they arrive in Servia without such a document, properly certified by the authorities in their own country, they would subject themselves to the payment of a trade tax. An import duty is charged on all samples and patterns, for which a drawback is given if required, the amount being repaid on re-exportation. But if this occurs at some other place than that of entry, then due notice must be given at the latter place, in order that the traveller's desire may be notified to the Customs authorities at the intended place of exit. Besides the above-mentioned import duty, which is levied provisionally, all samples and patterns are subjected to the following charges, the money thus paid not being returned on their re-exportation:—For loading (per 100 kilog.), 20 centimes. For weighing (per 100 kilog.) 8 centimes. For paving (per 100 kilog.), 10 centimes. For warehousing (per 100 kilog. and per day), 5 centimes.

**SPAIN.**—According to the terms of the convention entered into between the Governments of Great Britain and Spain respecting the commercial relations of the two countries, which was signed at Madrid on the 26th April, 1886, most favoured nation treatment is accorded to Great Britain co-extensive in amount of benefit with that accorded to France and Germany under the treaties of the 6th February, 1882, and 12th July, 1883. Article V. of the German treaty and Article IX. of

the French treaty with Spain deal with the subject of commercial travellers. Article IX. of *Commercial Treaty between Spain and France of February 6th, 1882*.—Spanish manufacturers and merchants, and also commercial travellers travelling in France on the business of a Spanish house, and, reciprocally, French manufacturers, traders, and commercial travellers travelling in Spain in the interest of a French house, shall be entitled to effect, without thereby being subjected, either in France or Spain, to any duty, purchases requisite for their trade, and to book orders with or without samples, but without any hawking of merchandise. Article V. of *Commercial Treaty between Spain and Germany of July 12th, 1883*.—Merchants and manufacturers, who are able to prove in the usual international way that in the country of their domicile they have been duly recognised as such, shall, in this respect, in the territories of the other party, pay no dues or taxes if they, with or without samples, but without taking about with them any goods, travel themselves through the country, or send commercial travellers or agents in the interests of their commercial or industrial business for the purpose of making purchases or of obtaining orders. It is, however, to be understood that the above arrangement is not to contravene the laws and ordinances on pedlary, which, in each of the two countries, apply to all foreigners. Articles liable to Customs duty, which are introduced as samples by merchants, manufacturers, and commercial travellers, shall mutually be relieved from duties, on the understanding that these articles be re-exported unsold within a period settled beforehand, with the proviso that the Customs house formalities for the re-exportation or for the re-warehousing of the goods be complied with. These formalities shall be established by common understanding between the two Governments. No impediment shall be placed on the movements of travellers, and the administrative formalities with reference to travellers' papers required on entering the territories of the high contracting parties, as well as on leaving the same, shall be limited to what the public safety absolutely requires.

**SWEDEN AND NORWAY.**—In Norway, commercial travellers require no license, and are only limited, nominally, in respect of the quantities for which they can take orders, or dispose of any goods they may bring with them. The following is a translation of the Norwegian law on this point:—Travelling merchants or merchants' clerks (commercial travellers), whether native or alien, shall not take orders for goods except in the market towns of the kingdom, nor for smaller quantities than those specified in section 21 (of the Law of the 8th August, 1842,\* and of the Law of the 4th June, 1866, unless the order shall be given by a local licensed trader. If they bring their goods with them, the lawfulness of the sale thereof shall in every respect be determined by the provisions of section 21 of the Law of the 8th August, 1842, as amplified by the Law of the 4th June, 1866. In Sweden, the following regulations apply:—Any foreigner or Swedish subject residing abroad, who has not paid taxes to the Swedish Government at the last collection, travelling about the country either on his own account or on that of another person with the view of effecting sales of foreign commodities to be delivered in the immediate future, whether travelling with or without samples, on entering this kingdom must send in a written declaration to the nearest collector of taxes living in the town, stating how long he intends to remain, and enclosing 100 kronor (£5 11s. 1½d.) as payment in advance for every month or part of a month of his intended stay for the privilege of carrying on his business. This payment, whether for one month or for a longer period, must be made to the tax collector of the principal town of the province in which the traveller is resident at the time. The receipt for the sum paid should be applied for on a printed form, which must be forwarded to the Governor of the province. The receipts are supplied by him to the tax collectors in the towns; they shall be for 100 kronor each, and must contain a notice concerning the due observance of the law on such trading. The foreigner or Swedish subject who wishes to effect sales of foreign commodities before beginning to transact such business must prove to the police that he has paid the proper sum, and, should he demand it, the police must give him a certificate in order to furnish him with proof of having duly applied to them. Should any one have neglected to pay the tax, or not have given information to the police before entering on business, he will be liable to a fine of from 100 kronor (£5 11s. 1½d.) to 500 kronor (£27 15s. 7½d.), and, also, in the first instance, must pay for a license for the time during which he was carrying on business illegally.

**SWITZERLAND.**—Commercial travellers are subjected in Switzerland to license fees in accordance with the varying regulations of the 25 cantons and half cantons forming the Swiss Confederation. Commercial travellers, however, who are subjects or citizens of States having treaties with the Confederation containing "most-favoured-nation

\* This paragraph, as amended in 1866, permits aliens as well as natives of every description (not being licensed traders) to import foreign goods and to sell them in the market towns of the kingdom on the following conditions:—1. That the sales shall be effected from the vessel in which they shall have been brought, or by giving them to a local licensed trader for sale on commission, or by public auction. 2. That in the case of sales effected from on board ship or by public auction, the quantities thus sold shall not be smaller than those specified in the list attached to the law. *Observation.*—As commercial travellers must necessarily deal with "local licensed traders," whether they desire to take orders for goods, or to sell such samples or goods as they may have brought with them, it is unnecessary to reproduce the long list of limitations in quantity attached to the Laws of 1842 and 1866.



treatment" clauses are exempted from these fees and licenses if they are *bona fide* travellers for orders and do not carry about goods for sale. This exemption is secured to them by Article XXII. of the Franco Swiss commercial treaty of 1882, which, in translation, runs as follows:—"French commercial travellers travelling in Switzerland on account of a French house, and, reciprocally, Swiss commercial travellers travelling in France on account of a Swiss house, may, on production of a card of legitimation or on mere justification of their identity, make, without being subjected to any license fee, purchases for the needs of their industry, or collect orders, with or without patterns, if they do not carry about goods for sale." In the official list of the different license fees collected in the 25 cantons and half cantons, it is expressly stated that commercial travellers for orders, who belong to States enjoying by treaty most favoured-nation treatment in Switzerland, are exempted from these fees. With very few exceptions, Swiss commercial travellers do not enjoy similar exemption even in their own cantons. I inquired of M. Droz, the head of the Federal Foreign Office, what document British commercial travellers would require in order to secure this exemption, and his Excellency replied that it should be a document clearly showing that the traveller in question was employed for a house of business having a British nationality and domicile.

**TURKEY.**—With regard to the subject of regulations affecting commercial travellers in the colonies, a circular has been issued by Lord Knutsford to the officers administering the various colonial governments. The reports which have been received in response to this circular contain the following information respecting the regulations in force in the various colonies; those for British Guiana, Cyprus, and Trinidad, being reproduced from the March number of the *Board of Trade Journal*.

**CYPRUS.**—There are no laws or regulations in force in Cyprus requiring commercial travellers coming to this country to take out licenses, or in any way affecting the freedom of their operations, but the municipal councils which are established in the principal towns have power by law to levy what are known as "trade rates," that is rates charged on persons exercising any trade, profession, or calling, within the municipal limit. So far, no rates have been specially fixed for commercial travellers, but they might be classed under the following heads, for which various rates are in force as stated against each, viz.:—Merchants, 3s. to £1 per annum; travelling merchants, 1s. 4d. per mensem; commission agents, 5s. to 15s. per annum. With regard to the Customs regulations in force affecting travellers' patterns or samples, the Customs laws provide for no exemption from taxation of such patterns or samples, but the practice in Cyprus is to register on importation, and assess the import duty at the ordinary rates on all patterns and samples which have a marketable value, the importer depositing at the Custom house of the port of entry the amount of import duty. If, subsequently, the patterns or samples are taken out of the island, the amount of import duty so deposited is returned. Should only a portion of the patterns or samples be withdrawn, a proportionate amount of duty is returned. In the case of patterns or samples of no marketable value, no charge is made and no deposit is required.—*Board of Trade Journal*.

### Steam Finishing—Meltons—Scouring before Fulling —Gigging—Brushing and Shearing—Union Bearers.

When speaking of gigging in a former article, we mentioned the troubles which often arise to annoy the operative and perplex the finisher. The fact of gigging too dry was noted, but we unintentionally forgot to mention that chief of all evils, "tender goods." It is at the gig that much of the foundation is laid for the existence of this difficulty, and it is here that we must expect and demand the greatest care. We hinted all through our paper on gigging, and, in fact, common sense would surely show, that it is impossible to gig down hard at first on the face of a piece of cloth, and then to expect our fabric to finish strong, firm, and durable. The most natural course to pursue, if this evil is to be avoided, is to start with a poor grade of slats, then to introduce better ones at regular intervals during the operation, and to run the cylinders first one way and then the other as these changes are made. Do not use sharp new work until finishing, and then, when such work is used, be very careful indeed in its application to the fabric. Another point to be observed is the necessity of keeping the goods sufficiently moist. A dry fibre is more apt to give way to the wear and tear of work on the gigs than a wet one, and so we may be safe in saying that tender goods are more likely to be made when the gigging is dry. However, if these few cautions are observed, we may be sure that, if tender goods result, the cause has been elsewhere produced. It is absolutely necessary to have regard always to the style of finish a piece of goods is to receive all through the finishing process. If a desired finish requires considerable gigging, we must look to this fact when we are fulling the piece, and give it the necessary body in the mills, so that it shall be in proper condition for successful work at the gigs. If at any step in the process this fact is overlooked, we shall be certain to have trouble all along. For instance, if a worsted finish is desired, on a piece woven of single yarns which has been fulling eight or more hours, it is absolutely impossible to obtain that result without injuring the strength of the fabric. Always be sure that the goods are strong before they go to the

gigs, and then, if the gigging is carefully attended to, we need have no fears of tender goods at this step, in the process at least. In bringing out a steam finish, quite different treatment is necessary from that which we use when working on ordinary woollen goods. True, we have the nap to work on just as in other cases, but this nap must not only be even and smooth, but it must also show out, to the best possible degree, the inherent lustre of the wool fibre. The methods of obtaining this result have decidedly changed in recent years, but it is an open question whether the results have improved in proportion to the methods themselves. The finish which used to be produced, in the old way of boiling the goods, without a doubt very much surpasses anything which can be obtained by the later and more modern machines. This fact is true as well of other processes in finishing. Take, for instance, the pressing. Hardly any one would deny that, in many ways, the old methods of pressing in papers gives a better and a more permanent finish than that which is obtained in the more recent plans. The superiority of the results from the older methods, in both the cases above mentioned, lies chiefly in the fact that the finish is more permanent. We can, no doubt, obtain as high a finish as ever, and do it, too, in much less time and with less trouble, but it will not last as long. It does not do, however, to speak too disparagingly of all our modern inventions and improvements, since we all make constant use of them, and since we all have very satisfactory reasons for doing so. There are at least two machines in use for steaming goods. These are both alike in principle, but they differ materially in construction. The patent steamer is older than the steam gig, and hence we will speak of that machine first. The steamer consists of an upright cast-iron frame. At the top and bottom of this frame there are projecting arms in which rollers may be set and fastened. The rollers consist of galvanized iron pipe, perforated with small holes, and set in steam-tight sockets on the projecting arms of the frame. Pipes are connected with the machine which enable the operator to force either water or steam into the rollers at his pleasure. The steam and water pipes are independent of each other, and each have a separate valve controlling them. The cloth is tightly rolled on these perforated rollers, and then, after they are placed in position and locked, either steam or water may be forced into the pipe and through the cloth. By the proper use of this mechanism, we are able to arrive at the desired results. But the later device for accomplishing this same end is the steam gig. The steam gig differs from the ordinary up and down gig only in the application of steam or water to the valve as it is passed over the teasels. It is, in fact, nothing more nor less than an up-and-down gig with copper perforated cylinders instead of wooden rolls at the top and bottom. Steam is admitted to the cylinders from both sides, and controlled by valves. The bottom cylinder is placed in a tank, into which cold water may be run, so as to cool off the cloth after it has once been steamed. The steam gig, then, it is evident, possesses decided advantages over other steaming apparatus, in that it allows the wet gigging and the steaming to be done at the same operation. In order to get a clearer notion of the process of steam finishing, let us take up in detail the treatment necessary for one or two special grades of cloth. We will look first at the treatment of meltons. The best results are attained with this class of goods if they are scoured before fulling. This aids in making the colours show up clearly and distinctly, and, at the same time, enables the fuller to produce the fine close felt which is all important in the treatment of these goods. These goods should require no flocks, and they should be shrunk up at least three inches to the yard. This amount of shrinkage will be sure to give the fabric a solid, firm, and substantial feeling when finished. After the first scouring, the goods should be dried, or at least extracted, before they are put in the mill. In fulling, use a neutral soap, since all the dirt and grease have already been removed in the washers. This will necessitate longer fulling, but here is just one item which we want, for in no other way can we produce a close fine felt. The piece must be well looked after to prevent wrinkling in the mill. In applying the soap, be sure not to use too much. This is one reason why I favour drying before the piece is put in the mill at all. If the goods are too wet, there is danger of making them spongy, and when the fabric is wet from the washers, if the piece is run directly into the mill, then the addition of soap only makes it all the more so. After fulling, scour again, this time using no soap, as what was used in fulling will be quite sufficient. Warm water may be used from 100° to 110° F. Be sure that every trace of the soap is washed out of the goods, as the proper lustre cannot otherwise be obtained. Now for the gigs. Only old work should really be used on these goods, and they should be run one way. Only the top of the felt should be touched, not the ground. After gigging, the fabric should be cropped so as to even down the nap and leave it short and smooth. At this step, we come to the steaming process. We put our piece on the wet gig, give it a couple of runs up and down, and then roll it tightly upon one of the perforated cylinders, and cover it with the leader. Then tie the leader securely at both ends, and wind a strip of cloth, three or four inches broad, over the whole thing, from end to end. These precautions are necessary so as to keep everything in place during the steam blowing operation. The roll is now placed in the steamer, and, after being securely locked, the water is turned on until the piece is quite wet. Then shut off the water and admit the dry steam, continuing this until the steam comes through the whole roll quite as freely as did the water just before. Then shut off the steam and turn on the water again in order to cool off the fabric, and our operation is complete. The leader is now removed and the piece is taken to the wet gig,



where it receives another gigging. The piece is next rolled up on the perforated cylinder again, this time being careful to take the other end first, and the operation is gone over a second time as indicated above. Three or four repetitions of the steaming process ought to be sufficient, but it may be repeated as often as required. Here we have substantially the plan to be adopted in the use of the old fashioned steaming machine. Now let us look at the same operation when performed on the steam gig, the more modern contrivance for obtaining the same results. The piece of goods is put on the gig just the same as we should were we using an ordinary up-and-down gig. Run the piece on the top roller first, and then wire it to the leader of the bottom one, and run it down on to this. During the two or three following runs, the tank at the bottom should be full of water, so that by the time the piece is rolled on the top cylinder, leader and all, it shall be thoroughly wet. Then turn on the steam at both sides and keep the gig in motion all the time. As soon as the steam comes through the roll, we run the cloth down on the bottom cylinder through the tank of cold water. This seems to cool it off. When the piece has had a couple of runs in this way, we run it on to the bottom cylinder, along with the leader, with which we cover it as before. Then draw off the water from the tank and turn on the steam as before, on the top roller. After this is repeated a few times, the operation will certainly be complete. The piece is then rolled off the gig, extracted, and dried. After they have had a few runs on the brush, the goods are then ready for the shear, but a little steam while brushing for the shear will do no harm, and may do considerable good. As to the afterwork of finishing this grade of goods, we may as well give a few hints, although the actual steam-finishing process is now complete. In shearing, be careful not to rough up the face too much by having the raising brush on too hard. Meltons want to be sheared quite low, without either exposing the threads or scraping the face. After the next brushing, which must not be too hard, and which must be accompanied by a little steam, we are ready for the press. As to pressing, we naturally prefer running the face of the goods to the roll. This usually does away with the necessity of steam brushing them after pressing, but sometimes it unavoidably happens that the fabric has a glazy appearance, which makes steam brushing a positive necessity. The piece when finished should possess the proper lustre, and, at the same time, have all the firmness and body required, without feeling at all hard or harsh. In working on piece-dyed meltons, we run the piece on to a modern roller after they are steamed, and allow them to stand. If they have to wait any length of time, they should be turned end for end once in a while. Then after they are returned from the dyehouse, they should receive a few runs on the wet gig to straighten out the nap before proceeding with the remaining processes of the department. Another class of goods which receives a steam finish is that which is known as "beavers." The cotton warp beavers are the most difficult to finish, and we must depend most specially upon the fulling to produce the desired effect. In scouring, it is all important that every trace of soap be entirely removed. It is not really necessary to have either a very rich or heavy soap in fulling, as such would be all the harder to remove in the last washing, and cloudy goods might result. After scouring, extract for the gig, where it is necessary that the felt be well broken up and nap enough produced to properly cover the thread. Proper nap must be secured at the bottom, or else the goods will look gray and raw when finished. This bottom nap may be well produced by machines for the purpose. In the gigging, the goods must be run always the one way, as the nap must lie straight and smooth. Then the goods should be taken to the cropping machine and cropped close enough to give the wet gig a good chance to get clear to the bottom of the nap to straighten out all the fibres. If cropped too low, however, the goods will look gray, and if not cropped enough, the wet gig cannot properly perform its work. Now, after this wet gigging, the goods are rolled on the perforated cylinders and steamed in a way similar to that which has been already described for the finishing of meltons. The operation should be repeated once again after wet gigging the second time, and then they will be ready for the dyehouse. After this, they should be rinsed, extracted, and dyed. Then it is well to give the fabric a run or two on a dry-beater gig, or a short brushing with a little dry steam may not be out of place. Then at the shears run them down as close as possible without showing the threads. The nap should now feel short and sharp when rubbing against it, nor should it show any roughness when it is done. After the fine shearing is complete, the goods should be brushed with steam, and then they are ready for the press. It is advisable to press with the face of the fabric down, in this case, as we want all the lustre we can possibly get. Then, after a light steaming to remove the press glaze, our goods are all ready to be rolled up and sent away.—*Boston Journal of Commerce.*

### Cloudy Cotton Cloths.

Writing in the *Manufacturers' Review*, a correspondent says:—It will not be at all strange to find that weavers are extremely non-committal upon the subject of cloudiness in cloths. Some claim that if they receive good, even, warps and wefts, it is quite out of the question to weave cloudy cloth. Other weavers with whom I have conversed, and who have given their opinion quite freely, are not so conservative. It will be my purpose in this paper to present some of their views, because it will show to what extent they differ. These are the statements of men of experience,

and for that reason are of value. The term "cloudy cloth," says one weaver, may be used in several senses. It may depend upon the way the warp runs, or upon the weft, and sometimes upon both. It will be interesting to inquire what are some of its causes. We will take first the relation of cloudiness to the warp. This may occur in several ways. Sometimes the lay may be lower than it should be, being below a line drawn from the top of the breast beam to the whip burr, or where the yarn passes over from beam to harness. Again, the yarn in winding on to the beam or slasher is allowed to pile, or wind unevenly, in such a manner that there will be high and low places on the beam, and the latter, in relieving the yarn, presents two or three different diameters, and these diameters, shifting on the same line alternately, first high and then low, result in cloudy cloth. Another thing to be avoided is the unequal tension in making harnesses, and one has only to examine a harness to find all through it places where the heddles are tight and slack in spots of an inch, and sometimes more, in length. This will show more clearly in the looms. If a loom is not hung with the nicety that is requisite, cloudy cloth will inevitably be made. The reason is that tight places on the harness stretch the warp and keep it slack, while the loose places in the harness will remain in a normal condition. As the change of harness is going on, and the weft is put in shot after shot by the shuttle, one may see the cloudy cloth warp rise. Another source of trouble is that the harness eyes in the shafts may be put in so that the band may be tight, drawing the heddles tight on one side, and bringing half of them above a horizontal line, and stretching the warp in that place, as above, with the same result. Another difficulty arises from hanging one harness higher than another, which can be readily observed by watching the let-off motion. When one shade goes down, it will let off more than the other. The same can be noticed when friction rope is used. It may not always let off at every clip of the shade, but when it does, it will be more than is proper, if the harness is hung as above described. Trouble is often caused by having straps of different thicknesses on the opposite end of the same harness, for this will result in an uneven movement of the two ends, because of the greater circumference of the thicker strap. Another source of trouble is in the shape of the dent in the reed. One with a square front, or nearly so, will increase the above troubles. Trouble will also arise in having a room too damp. If friction ropes are used, it will affect them to such a degree that they will become tighter than is proper, and they allow the beam to turn in the grip by jerks. Hence the superiority of chains for friction. When a room gets too damp, the yarn will stick to the whip bar closer, and cause it to work heavy, uneven, or cloudy cloth. Now on three, four, or five harness work, rowey or cloudy cloth can be made very easily under the circumstances described. A weaver in discussing the subject of cloudy cloth gives considerable importance to the condition of yarns in their various processes. His views are of such value that I will present some of them. In speaking of uneven yarn, which is an important factor in the making of cloudy and slazy cloth, he says that it is not necessary to go to the cloth room to find the cause. Go to any dry goods store and examine goods with your pick glass, or even take the shirt on your back, and you will find yarn varying from two to four numbers. But does this make all the cloudy cloth? I think not, but the weave room will have to shoulder some of the responsibility. We will now go into the cloth room, which takes the cloth from the several mills, some using mule, and others frame weft. It is an easy matter to pick out the pieces that were made from frame weft as they go from the folder. How is this? Some one will ask. First, the cloth is not so soft as the goods made from mule weft, but has the appearance of being heavily sized. Then it does not seem to have a good cover, but looks reedy and loose, the yarn being apparently of lighter weight, although the cloth weighs the same as with mule weft. Examine the frame weft cloth, and it will be found to have a dirtier appearance, a great deal more cotton leaf and black specks in the cloth, and, on close examination, you will find a larger part of the specks are in the frame weft, while, in the mule weft goods, no marked difference can be seen between the amount of specks in warp or weft. Investigation as to the cause of the difference leads me to this conclusion:—The roving for the warp and weft each passes through the same process in cleaning and carding, but, after it is spun into yarn, the warp goes through the guides on the spoolers, the drop wires on the warpers, and the slashers to the loom, where it meets the harness and reed. At each of the machines, more or less of this dirt and leaf is thrown off, and the warp left comparatively clean. The weft, on the contrary, goes directly from the bobbin into the cloth. But does not the mule weft go directly to the cloth in the same way? asks one. Yes; but let us hear what the mule spinner has to say about it. He says that the vibration of the yarn, caused by the spindles as the carriage moves out, throws off large quantities of leaf, and, as evidence of this, it is seen all along the floor under the mule and on the carriage, and, as the dirt does not appear in the cloth, I must believe he is right. I know that some will say that the place to clean cotton is in the card room. That in the main is quite correct, but I have examined some of the best brands of goods made in the country, and none are entirely free from this specky substance. I think the cloth is just as good, and, after being bleached, would probably look as well, but people who buy sheetings buy them for what they appear to be. In coming directly to the weave room, I wish to say something relative to the causes of cloudy cloth from an imperfect tension. A good many are inclined to place the responsibility at the let-off. Now this may be possible, but not at all probable. When we



increase our tension on the warp and gain in length, we at once lose in the width of the goods. If weavers send 28, 36, or 40 inch goods to the cloth room, and they run one-half or three-fourths inch narrower, they will hear from it very quickly. Again, instead of cloth varying two inches in a yard in length, pieces of 80 yards will seldom if ever vary more than one-half to one yard on a rope friction, and with a good let-off motion less than that. On looms with a rope friction on the beam head, they will not let the warp off regularly as the ropes become worn flat. Sometimes they will let off every pick, then hold for two or three picks, then let go again. This gives irregular cloth, sometimes resulting in streaks, and sometimes it will be cloudy. Formerly, there was much complaint on this score, but of late years, when a loom gives trouble in this way, a little whitening sprinkled on the beam head will obviate the difficulty. This I regard as better and cleaner than black lead. Looms with a let-off motion, when properly adjusted, will work well, but, under the care of the average loom fixer, there will be more or less cloudy cloth. Sometimes it is oil on the break strap that causes it. A little waste may get fast and clog it. One harness drawn down lower than the other will cause it to let off irregularly. On old looms, the journal on the sand rolls may get worn so that it will cause vibrations. This will often result in cloudy places. These troubles often occur on looms weaving goods of less than 60 picks. On heavy goods it would not, perhaps, be noticeable. Many of these imperfections are scarcely to be seen in the cloth after it is folded, but on the inspecting table, or as it goes over the folder, these bad points will show up, if anywhere. I do not mean that a rope friction is preferable to a good let-off motion, yet I think there is a chance for much improvement. In closing this paper, I desire to mention one or two points with regard to heavy streaks and cloudy cloth. The case to which I will refer occurred a few months ago, in one of our large manufacturing centres, and in a weave room where a heavy grade of cotton flannel was being woven, 2½ yards to the pound. An order came in to change the grade of the goods to light flannels, 5½ yards to the pound, and it was at once noticed that a very large per cent. of seconds began to accumulate because of cloudy cloth. The weaver's attention was called to it, and he said that, as the number of the weft had been changed, it was beyond his control. When the spinner's attention was drawn to it, he said that he was not responsible, as the trouble was in the card room. But the most interesting feature of this case came later, for another order was given to take off print goods and increase the light flannels, and in order to do this, the looms which had been changed from heavy flannels to a lighter grade of goods were put on still another grade, while the light flannels that had been causing so much trouble were put on looms which had been weaving prints. Now let us see what the outcome of the change was. It was found that where three cases of seconds were made in a given time before, less than half a case was made. I refer to cloudy cloth particularly. No change had been made in the warp or weft, so that the bad work attributed to the carder had been a manifest injustice, for with the change of front on the loom no defect in the cloth appeared. This instance, with many others that I recall, convinces me that the card room is not always responsible for cloudy cloth.

### Modifications in the Customs Tariff of Canada.

The following is a list of changes which have recently been made in the Customs Tariff of Canada. The re-arrangement of classification and the duties on the articles enumerated below are to be substituted for those hitherto in force:—

Classification of Articles.	Rates of Duty.
Carpeting, matting and mats of hemp, carpet linings and stair pads	25 % ad val.
Collars of cotton, linen, or celluloid	Per dozen 0.24 and 30 % ad val.
Coloured fabrics, woven in whole or in part of dyed or coloured cotton yarn, or jute yarn, or of part jute and part cotton yarn or other material except silk, not otherwise specified	25 % ad val.
Cotton cordage and cotton braided cords	30 % ad val.
Cordage of all kinds not otherwise specified	Per lb. 0.01½ and 10 % ad val.
Cotton denims, drillings, bed-tickings, gingham, plaids, cotton or canton flannels, flannelettes, cotton tennis cloth, or striped zephyrs, ducks and drills dyed or coloured, checked and striped shirtings, cottonades, Kentucky jeans, pantaloons stuffs, and goods of like description	Per sq. yd. 0.02 and 15 % ad val.
Cotton sewing thread in hanks, black, bleached, or unbleached, three and six cord	12½ % ad val.
Jeans and cottiles when imported by corset and dress stay makers for use in their own factories	25 % ad val.
Cuffs of cotton, linen, or celluloid	Per pair 0.04 and 30 % ad val.
Curtains when made up, trimmed or untrimmed	30 % ad val.
Hammocks and lawn tennis nets and other like articles manufactured of twine, not otherwise specified	35 % ad val.

Laces, braids, fringes, embroideries, cords, tassels, and bracelets; braids, chains, or cords of hair; lace collars and all similar goods, lace nets and nettings of cotton, silk, linen, or other materials	30 % ad val.
Oil cloth and oiled silk, in the piece, cut or shaped, oiled, enamelled, stamped, painted or printed, india-rubbered, flocked or coated, not otherwise provided for	Per sq. yd. 0.05 and 15 % ad val.
Shawls and travelling rugs of all kinds and materials except silk	25 % ad val.
Sewing and embroidery silk and silk twist	25 % ad val.
Clothing, ready-made, and wearing apparel of every description composed wholly or in part of wool, worsted, the hair of the alpaca goat, or other like animal, made up by the tailor, seamstress, or manufacturer, not otherwise provided for	Per lb. 0.10 and 25 % ad val.
Carpets, viz.:—Brussels, tapestry, Dutch, Venetian, and damask; carpet mats and rugs of all kinds, not otherwise specified; and printed felts and druggets and all other carpets and squares not otherwise provided for	25 % ad val.
Smyrna carpets, mats, and rugs	30 % ad val.
Scrim and window scrims of cotton, plain or coloured, cambric cloths, muslin apron checks, brilliants, cords, piques, diapers, lenos, mosquito nettings, Swiss jaconets and cambric muslins, and plain, striped, or checked lawns	25 % ad val.
Manufactures composed wholly or in part of wool, worsted, the hair of the alpaca goat or other like animals, viz.:—Blankets and flannels of every description; cloths, doeskins, cassimeres, tweeds, coatings, overcoatings, felt cloth of every description, not otherwise specified; horse-collar cloth; yarn, knitting yarn, fingering yarn, worsted yarn, knitted goods, viz.:—shirts and drawers and hosiery, not otherwise specified	Per lb. 0.10 and 20 % ad val.

The following articles are free of duty:—

Cotton yarns not coarser than No. 40, unbleached, bleached or dyed, for use in covering electric wires; also for the manufacture of cotton loom harness; and for use in the manufacture of Italian cloths, cotton, worsted, or silk fabrics.  
Cotton yarns in cops only, made from single cotton yarns finer than No. 40, when used in their own factories by the manufacturers of Italian cloths, cashmeres, and other cotton cloths, for the selvages of said cloths, and for these purposes only.  
Canvas of not less than 45 inches in width, not pressed nor calendered, for the manufacture of floor oil cloths.  
Jute yarn, plain, dyed or coloured, when imported by manufacturers of carpets, rugs, and mats, and of jute webbing or jute cloth, for use in their own factories.  
Rags of cotton, linen, jute, hemp, and woollen; paper waste or clippings, and waste of any kind except mineral waste.  
Wool and the hair of the alpaca goat and of other like animals, not further prepared than washed, not otherwise specified.  
Yarns, made of wool or worsted, when gnapped, dyed, and finished, and imported by manufacturers of braids, cords, tassels and fringes, to be used in the manufacture of such articles only in their own factories.

### Uneven Cotton Yarns.

A correspondent writes:—"I often hear the remark, why is it that so much uneven yarn is spun. I am quite as interested in this subject as any in the cotton department, except that of even carding. If we keep our carding well in hand, then we may count on fairly good spinning, though the numbers vary three or four counts. There is a multiplicity of causes for making uneven yarn in any cotton mill. I find a great many men who are trying to prove that facts are only theories. Let us take the subject of atmospheric changes in the carding department. It is a fact, and not a theory, that these changes are the cause of excessive changes in work. They are not the cause of all the uneven roving and yarn that is made, but, nevertheless, the evidence to the one who has watched the development of atmospheric changes is convincing. If this is not so, why is it, I ask, that the numbers at railway heads are not the same on Monday morning as they are on Saturday afternoon? The same heads, the same rolls, the same weights, and the same weight of cotton running up to the machines, and yet the work as it is delivered through the trumpets is fully 6 per cent. on the light side on Monday morning. The solution of this is in the condition of the temperature and humidity of the room. The room is not in the same condition. Will any one say that a temperature of 67° will not affect the running of railways so far as the weight of the drawing is concerned as a temperature of 79°? Whenever the temperature in a room where railway heads are working runs down to a low point on account of the atmosphere's being cold, then we may expect light and uneven work at once, unless attention is paid to the friction that has been generating at the trumpet. There is another point that I will speak about, and that is the condition of the carding machines. No two cards will deliver carding of the same weight. We may put on the same grade of laps, and the cotton will not receive the same treatment; that is to say, one card will gather out and retain more cotton and foreign substance than another. We may not be able to detect it at a casual glance, but the difference is the same as spoken of. It has been a mooted question

amongst our very ablest manufacturers why there is often found a variation at railway heads. One head may be running right on the standard, while another just beside it will be delivering drawing two or three per cent. light. Is it not because the cotton coming up to the railway head does not have the same effect on the trumpets? and, for that reason, quite a variation is found when the heads are sized up. If it were possible to maintain the same temperature and humidity, and if it were possible to deliver the good even carding to be drawn at the railway heads, then we could reckon on fairly good work. As is well known, this is not the case, for there is a constant fluctuation. Add to this the doubling processes beyond, and we deliver our roving to the spinners in as good a condition as I should suppose we could. There is considerable talk about doubling. Well, what does it do? Will it take a light end and a heavy end and equalize them. Oh, yes, providing that they are put alongside each other. But who is going to do this? Will those running the drawing? Well, no, not unless it happens so. The same will be the result at the roving frames. Two light or two heavy ends are just as liable to run in and continue the unevenness as they are to come light and heavy together, and thus equalize them? Then again, there is an unequal draught all the way along from the carding to the spinning frames. Loss of cotton fibres makes light yarn, a gain of cotton fibres makes heavy yarn. It is a question with me whether we can ever draw down a heavy grist of cotton at the railway heads with such environments as we are surrounded by, and have the work any better than it is.

### The Flax Industry in the United States.

Recently, there has been much correspondence in the American papers regarding the growing of flax and its manufacture in the United States, and many and various are the reasons given bearing upon the failure to produce fabrics made from flax that would remunerate those interested in the industry. One paper says:—In 1866, the area under cultivation of flax in the United States was something over 50,000 acres, by 1869, it had almost doubled, in 1866, about three-sixteenths of the cotton crop was covered with flax bagging, and in 1869, three-fourths of the entire crop was baled with flax fibre. This meant an increase of fibre in four years of from 12,000,000 pounds to 80,000,000 pounds. The cotton crop of 1870, 4,347,000 bales, taxed the capacity of every bagging mill in the country. Here was a very good beginning of a flax fibre industry that, with a little encouragement, would have been developed into the manufacture of something better than bagging. Flax culture seemed an established thing. The people interested in the industry were sanguine. Machinery was procured for the manufacture of crash and coarse linens. But in 1872, the duty was removed on jute butts, and mill after mill in the West was forced to suspend operations, and have never resumed. During the last year or two, however, some mills in the West, on account of the high prices of foreign flax, have used some domestic flax for binder twine. In behalf of the Flax and Hemp Spinners and Growers' Association, President A. R. Turner, Jr., says it may be well to retain the duties on flax for the present, to stimulate the raising of the fibre. That, if we can re-establish the flax culture, new and perfected methods will cheapen the production so that we can compete with foreign nations. There is a home demand for good flax fibre for yarns, threads, etc. While the making of threads requires a strong flax, many grades of flax not suitable for threads are fitted for weaving, and coarse linens can be made from ordinary grades of Western flax, when sufficient protection is given the manufacturer in the producing of goods. Manufacturers cannot co-operate with the farmers to-day, because the home supply is inadequate, and they must buy in European markets in order to command the best assortment and lowest prices. That there has been good flax fibre raised in the United States through a long series of years, as well as at this time, is an established fact. An experienced manufacturer of this place has recently received samples of flax from Wisconsin, grown for fibre from imported seed and water retted, which will compare favourably for fineness and spinning quality with the higher grades of European flax. It is suited for the finest yarns. If adequate protection were granted to the would-be manufacturers of woven linens, there would be a demand at once for the cheap fibre that can be produced from Western straw as now grown, this straw at present being burned or used as bedding for farm stock.

### Dyeing Cotton Yarns in the Cop.

The object of this invention is a process for dyeing cotton yarn directly as it is spun and while it is yet in the form of cops, thus obviating the necessity of forming it into skeins. This is a highly important feature, as it effects a saving of all the time employed and the expense involved in putting up the yarn into skeins previously to dyeing it, and in winding it upon the spools again when the dyeing is completed. Many attempts have hitherto been made to accomplish such a result, but none of the remedies suggested have proved workable in practice. All methods previously proposed for the solution of this problem have been mechanical ones. This invention, on the contrary, relates to a chemical process whereby the aim it is sought to attain is actually fulfilled in a thorough and effective manner. The process described mainly consists in submitting the yarns, while wound in the form of cops, to two distinct operations, a mordant being prepared for the purpose, quite independent of the dye. This separation of the mordant from the dye

may appear trifling, and yet it is owing to it only that the desired purpose is attained. It has been demonstrated beyond doubt, by a number of experiments, that both the total omission of the mordant and the use of a mordant mixed with the dye—two methods which may fairly be regarded as equivalent—invariably lead to failure; the drawback being that, even supposing the different yarns capable of being dyed uniformly and without specks or patches, the outer yarns are always more fully impregnated with dye than those nearer to the core. Primuline may be used for a mordant, while, for dyeing, suitable salts, such as naphthol and naphthylamine, may be employed. The process is carried out as follows:—The cops, after being thoroughly treated in a boiler and washed, so as to be freed from all fatty substances and other impurities, are placed in a boiler containing the mordant, which may consist of five parts of primuline and five parts of common salt for each 100 parts of water. This mordant is so proportioned that its weight is equal to the weight of the yarn to be dyed. The whole is now thoroughly treated for several hours under from two to three atmospheres of pressure with the assistance of a steam pump. After this the yarn is washed for several hours continuously with water cooled, by means of ice, to from 4° to 5°. It is then placed in a cold bath of 10 parts of water, one part of nitrate of soda, and two parts of sulphuric acid, and then washed once more as above. When the mordant has thus thoroughly penetrated into, and is fixed in, the yarn—which thereby acquires a uniform yellow sulphur-like hue—the dyeing proper may be proceeded with, with salts adapted to impart the desired colours, such as naphthol and naphthylamine, and is also effected under a pressure of from two to three atmospheres. The quantities must, of course, be proportioned to the shade of colour it is desired to obtain, and may be determined by test. The subsequent operations, such as washing, swinging, and drying, take place in the same manner as in the case of skeins.

### New Patented Fabric.

#### QUILTS, TOILET COVERS, &c.

This invention relates principally to the manufacture of quilts, counterpanes, toilet covers, and other similar goods, and in particular to the fancy goods which are composed partly or wholly of coloured yarns. Previously, such goods have usually been woven with white and coloured warps, only one colour appearing on each side of the fabric in contrast with the white, excepting in cases wherein striped effects have been produced. When figures or patterns containing two colours have been obtained, it has been necessary to use a drop-box loom and two or more shuttles, but the desired effect has not been so readily obtained, and the use of such a loom has increased the cost of production. The object of this improvement is to obtain a greater variety of effect with a single shuttle loom. Two coloured warps are employed, wound upon separate beams, and each drawn through a separate set of mails, which are in connection with a separate jacquard apparatus. Each warp extends across the breadth of the fabric, and may be of one, two, or more, colours, or partly white and partly coloured, according to the effects which it is desired to produce. In weaving, only one shuttle is used, and this carries white weft or weft of a colour differing from, or contrasting with, the colours of the warp yarn. The harness is so arranged that each jacquard apparatus has control of the warp ends from side to side of each warp, so that the warps can be raised and lowered to produce double effects upon both faces of the cloth, so that while one warp is forming a figure on one side of the cloth in one colour, the other warp is forming the same figure on the opposite side in another colour, the white or differently coloured weft being hidden between the two warps. When the warps are not weaving or forming figures, and it is necessary to form the groundwork of the fabric upon which such figures rest, then both warps and the white weft are utilized in the formation of a "two and two dice" ground, or a "calico" or "tabby" ground might be formed. Thus, by using both the coloured warps and the white weft in the formation of this groundwork, a ground is obtained on both sides of the cloth so as to display to the best advantage the solid coloured figures on each side, the whole fabric composing a firmly bound cloth. This combined arrangement of the harness and warps, and the peculiar style of groundwork, enable the inventors to alternate or change the colours of the figures composed by the coloured warps, even though lying in the same longitudinal direction, on the same side of the cloth, as often as desired, and also to make different parts of the same figure to be of different colours, by raising to either surface of the cloth, sometimes one coloured warp and sometimes the other, and sometimes the white or coloured weft. Thus the effect is produced of a three coloured cloth, in which the figures on both sides of the cloth are composed of first one colour and then another, or are composed of the two colours and the white weft in combination, in such a manner that the colours follow the outlines of the figures of the design, instead of being in stripes or straight lines. This result is obtained on both sides of the cloth, so that each side of the cloth contains a clear and distinct pattern worked in two, three, or more colours, spread artistically over the whole, or over both sides or faces of the cloth, a result which has hitherto been only accomplished by the use of two shuttles in a drop box loom. This improved fabric is easily distinguished from the ordinary "Alhambra" cloth, in which the figuring is in one colour only, and from what is known as "one-shuttle tapestry cloth," which is not "reversible," that is to say it does not show similar figures and colours on both sides.



## ORIGINAL DESIGNS.

On our first plate is a design suitable for a Tapestry Table Cover, as well as for many other purposes.

Our second contains a pattern for a Printed Blind, drawn by C. W. Sandiforth, 103, Racecommon Road, Barnsley.

The third design is intended for Silk Goods for either dress or upholstery purposes.

## MONTHLY TRADE REPORTS.

**WOOL.**—During the past month, the transactions in wool have been of a very disheartening kind to staplers, and there seems no early prospect of any improvement. The wool sold has been mostly at lower rates, prices having fallen at least 1d. per lb. on an average. In numerous cases, spinners have been buying tops in preference to handling wool, and as they actually required them, and invariably have purchased in small quantities. The yarn branches have been little better than the wool, orders having come in very meagrely, consequently, spinners are now holding stocks, where they have kept running full time, and merchants and manufacturers are buying these as necessity requires. The piece trade is in no better condition than the other branches, the coating departments being in a very unsatisfactory state, with no signs of any immediate amendment. The stuff branches have been generally quiet, new orders being for small quantities, and, generally, for goods of a fancy character. There has been fair repeat orders for some classes of fabric. The prices of both yarns and pieces show a downward tendency.

**WOOLLEN.**—This branch of industry has not been of the cheerful nature that has characterized it during the past few months. For most descriptions of goods there has been a falling off in the demand, owing chiefly to the fact that merchants generally have been offering lower rates than manufacturers are, at present, disposed to accept, the consequence being that producers are getting rather anxious, in many cases, as to the future, as old orders are being completed, and new work should now be in hand for next season's fabrics. The demand for high class worsteds still takes the lead, followed by serges, both for gentlemen's and ladies' wear, the latter cloth having still a large demand. Tweeds in medium qualities are also being much inquired for, but the prices offered curtails business. In the lower classes of goods, hardly as much has been done as during preceding months, still, for the clothing trade, many repeat orders have been given, and these will keep producers busy for a few weeks.

**LINEN.**—There has been a decidedly better feeling in the linen branches. Table damasks have been in improved demand, and the same may be said of drill, toilet cover, towellings, tea, glass, pantry, and other domestic cloths. In fact, with the exception of hand made linens, all departments have, during the month, worn a more cheerful aspect than for some time past, and especially is this the case in the window blind branch, which, this season, has been very brisk, producers having good orders on hand to last them some weeks.

**LACE.**—The lace trade has improved slightly. Manufacturers of lace curtains and window blinds have kept very busy, and orders are coming forward fairly well for the future. A steady business has been done in nets generally, and the same may be said of embroidery and cotton trimmings, whilst silk tulle, veilings, and foundation nets have been in moderate request. The hosiery branches, especially in cottons, have been rather quieter, and there are no signs of improvement. Prices for most classes of goods are rather low, and manufacturers still complain of the slight margin for profit.

**COTTON.**—The month of May has not proved an exceptionally heavy one from a seller's point of view, but still, in most branches, average results have been recorded, usually at steadily advancing rates. The demand for yarns has been fairly good all round, but the bulk of business has invariably gone into the hands of those sellers who have adopted moderate ideas, and who have been prepared to sacrifice, to a certain extent, some of their cheap cotton. Manufacturers, by their purchases of last month and this, are no doubt now sufficiently covered, and their present operations are more limited and also less imperative than was the case a short time back. Production and consumption have kept fairly well in line, though occasionally spinners are in receipt of instructions to keep back deliveries. The exports to India, China, and Japan, have been good, some fairly large quantities having been sold. In cloth, producers have been firm in their quotations, and there has been no undue pressure to sell. The best makes of shirtings and most varieties of bleaching and finishing cloth are sold a long way ahead, and makers are indifferent about making new contracts. Printing cloths have also sold well, and looms generally are running full time on these. Low shirtings have improved slightly. Dhooties and jaconets are well under contracts, and, in fact, there has been a good demand for most classes of goods.

## The Leeds Exhibition.

The International Exhibition which was opened in Leeds does not appeal directly to the textile trades, and it requires no words to show that an exhibition in such a town cannot be complete which does not embrace a display of textile machinery, fabrics, and ready-made clothing. These necessary elements are not conspicuous by their presence, which proves that the decision arrived at when a proposal was laid before the powers in Leeds to hold an exhibition on a very large scale, during the present year, has been strictly adhered to by a large number of those who might have rendered valuable assistance on the present occasion, not only in the way of giving their time in furtherance of the enterprise, but also as exhibitors. We cannot say we agree with the people of Yorkshire, and of Leeds in particular, in thinking that exhibitions have been much overdone. One promoted and carried out with the same enterprising spirit as that of the Jubilee year in Manchester is what we should have liked to see in Yorkshire, and Leeds had the opportunity, but allowed it to pass. We have all the elements required for a gigantic show. Our industries are numerous and varied—woollen and worsted, leather and engineering trades alone affording the material for a large display. Considering the resolution above mentioned, we consider that much praise is due to the promoters of the present exhibition. Certainly, it is only a small affair compared with what we and a large section of the public would have liked to see, yet it is interesting, and a few pleasant hours may be spent there. There are lots of out-door and in-door amusements, including vocal and instrumental music; and there are many interesting exhibits. With the majority of them we have nothing to do, but those more concerning the textile trades we will mention.

MR. E. S. HINDLEY, Bomton, Dorset, has a display of wall pumps, &c.

MR. J. B. CLABOUR, Guiseley, near Leeds, a horizontal high pressure steam engine.

MESSRS. ARUNDALE AND CO., Yeadon, near Leeds, have a show of pickers, &c.

MESSRS. STOTT AND CO., OLDHAM, show the "Stott" gas governor in work.

MR. THOMAS SLATER, Bradley Hill, Bramley, near Leeds, shows his excelsior felling machine.

MESSRS. WILSON AND LONGBOTTOM, Barnsley, show a loom with their patent dobbie in motion.

MESSRS. JOHN INGHAM AND SONS, Croft Head Works, Thornton, show shuttles and pickers.

MR. J. R. WOODHEAD, Whitehall Road, Leeds, shows a "Leeds" gas engine of two nominal horse power.

MR. J. SHAW, Albert Works, Huddersfield, gives illustrations of the saving in gas, when used in connection with the "Shaw" gas governor.

MESSRS. M. NEWSOME, SONS, AND SPEDDINGS, machine makers, Dewsbury, exhibit their patent automatic hoist gates for the safety of wells or shafts.

MESSRS. SHAND, MASON AND CO., Upper Ground Street, Blackfriars Street, have a specimen of their fire engines, with all appliances ready for work.

MESSRS. DICK, KERR AND CO., Britannia Engineering Works, Kilmarnock, have a gas engine at work in connection with a dynamo made by Blakey, Emmett and Co., Halifax.

THE CARROLL BOILER WATER PURIFIER COMPANY, LIMITED, 89, Cannon Street, London, E.C., show Smith's patented system of purifying water for steam boilers.

MESSRS. J. H. FENNER AND CO., Hull, have a very good display of belting, &c., including main driving belts, single belting, strap butts, hydraulic and pump butts, &c., also leather and flax hose, &c.

MESSRS. R. ANDERSON AND CO., Leadenhall House, 101, Leadenhall Street, London, E.C., shows lightning conductors, including copper tape and copper rope conductors, also various electrical articles.

MR. J. H. SUTCLIFFE, Globe Works, Blackburn, shows his patent buffer-bottom card or silver can, in the bottom of which is a spiral spring, which receives the force of the blow when the can comes in contact with the floor.

MESSRS. E. JAGGER AND CO., Oldham, patent portable cop-tubing apparatus, also spindle footstep protectors, and all kinds of conical, spiral, parallel, and other paper cop-tubes, made on the most modern and improved principle.

MESSRS. ALFRED HANDS & CO., 9, Gracechurch Street, London, E.C., and Huddersfield, show copper tape and copper wire lightning conductors, and also their method of repairing, banding, pointing, and raising factory chimneys without scaffolding or the stoppage of works.

MESSRS. J. AND H. BLAMIRE, Leeds Road, Huddersfield, an electrical apparatus for instantly and automatically conveying, at any time or to any distance, and to one or more required places at the same time, any various information with regard to the working of machinery. Also their patent bolster plate for mules, jennies, &c.

THE JOURNAL OF FABRICS AND TEXTILE INDUSTRIES.

12TH JUNE, 1890.



TABLE COVER.



June 12th, 1890.

THE JOURNAL OF FABRICS AND TEXTILE INDUSTRIES.

# RODGERS' PULLEYS

(REGISTERED.)

WROUGHT IRON THROUGHOUT, RIM, ARMS & BOSS.

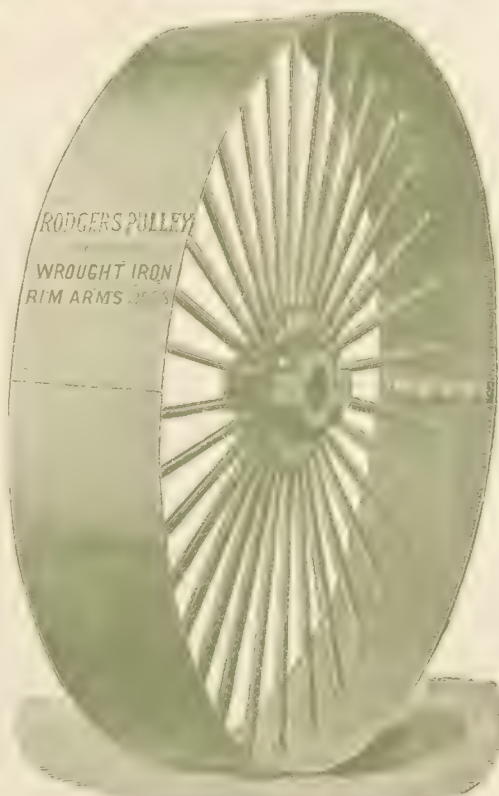
## 80,000 IN USE.

The only  
Wrought-Iron  
Pulley made.

The best  
Pulley  
in the World.

Turned  
and Finished  
perfectly  
true in a Lathe.

Split or Solid.



All Sizes  
up to  
24ft. diameter.

The  
only Pulley  
which is  
absolutely  
unbreakable.

The Lightest,  
Strongest,  
and  
Safest Pulley  
made.

Used Exclusively for driving the Electric Light at the late Fisheries, Health, Inventions, and Colonial Exhibitions.

**Sole Makers:—**

## HUDSWELL, CLARKE & CO., Railway Foundry, LEEDS.

**Telegraphic Address:—"LOCO," LEEDS.**

THE JOURNAL OF FABRICS AND TEXTILE INDUSTRIES.

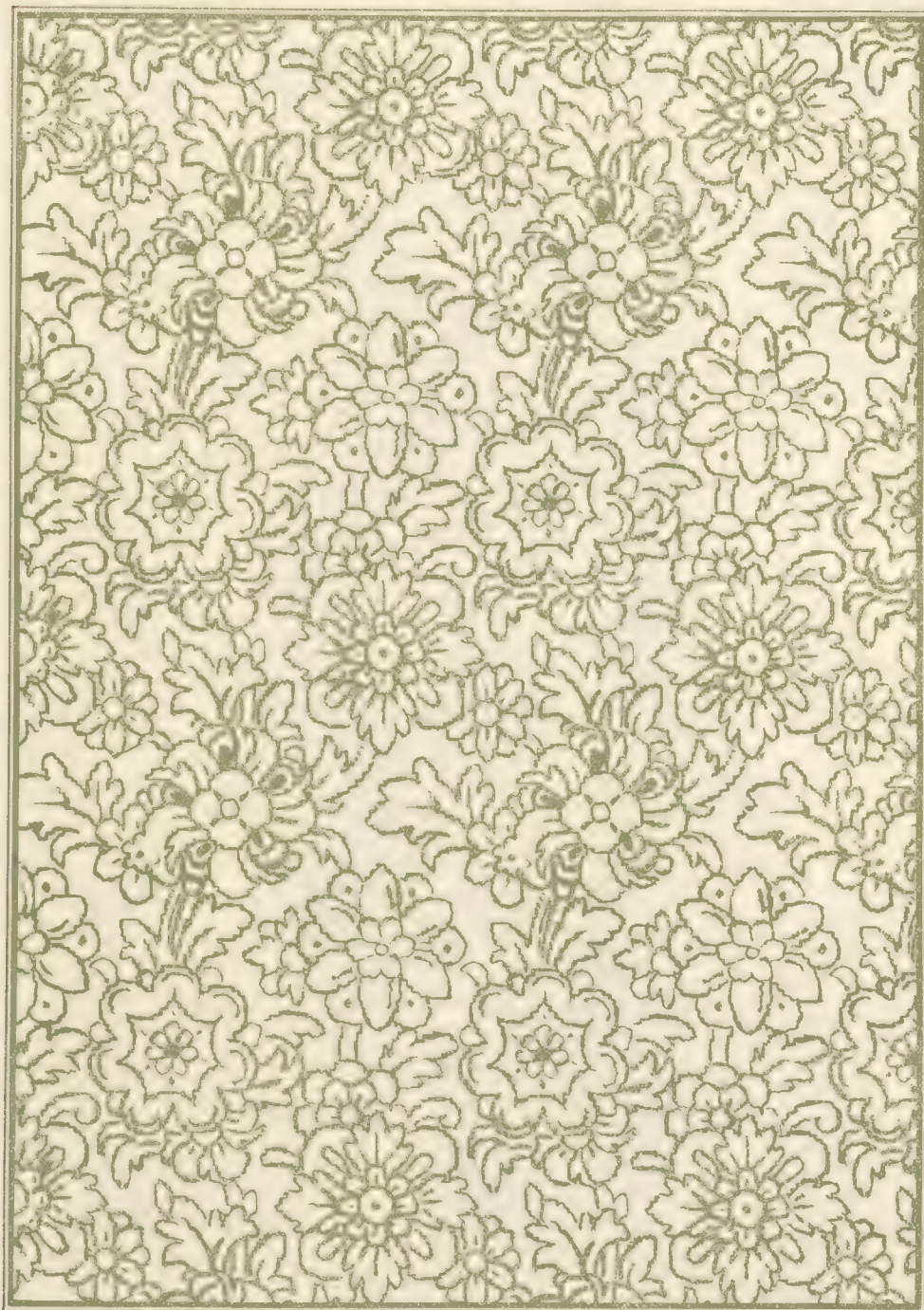
1274 JUNE, 1890

DESIGNED BY C. W. SANDIFORTH.



PRINTED BLIND.





SILK GOODS.

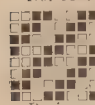
## FASHIONABLE \* DESIGNS.

\* \* \* \* \* A Supplement, containing Woven Specimens of the Designs given on this page, is presented each month to those of our Subscribers who manufacture Cloth for Ladies' and Gentlemen's wear.

## Woolen Trousering.

No. 639.

Warp :—

	4 ends Blue,	12 skeins.
	4 „ Blue and Black twist,	10 „
	1 end Fancy twist,	6 „
	5 ends Blue and Black twist,	10 „
	4 „ White and Black twist,	10 „
Design.	1 end Fancy twist,	6 „
	5 ends White and Black twist,	10 „

24 ends in pattern.

Weft :—All Slate, 13 skeins.

2,050 ends in warp : 32 ends per inch ; 8's reed, 4 ends in a reed ; 31 picks per inch ; 64 inches wide in loom ; 56 inches wide when finished. Weight 21½ ozs.

No. 641.



4 times.

Design.

Twice.



Pegging Plan.

Warp :—

5 ends Black.
2 „ Light Blue.
11 „ Twist.
2 „ Light Blue.
6 „ Black.
2 „ Dark Blue.
1 „ Twist.
3 „ Light Blue
6 „ White.
3 „ Light Blue.
5 „ Twist.
1 end Orange.

4 times.

Draft.

Twice.

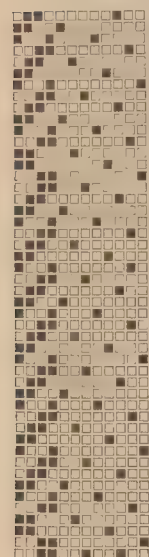
Warp :—12's worsted.

Weft :—All Black, 24 skeins.

50 ends in pattern.

## Fancy Suiting.

No. 640.



Warp :—

1 end Blue.
1 „ Red.
6 ends Blue.
8 „ Black.
6 „ Blue.
1 end Red.
1 „ Blue.
8 ends Black }
8 „ Blue } 4 times.
8 „ Black.

96 ends in pattern.

Weft :—

1 pick Red.
10 picks Blue.
1 pick Red.
36 picks Blue.

48 picks in pattern.

Pegging Plan.

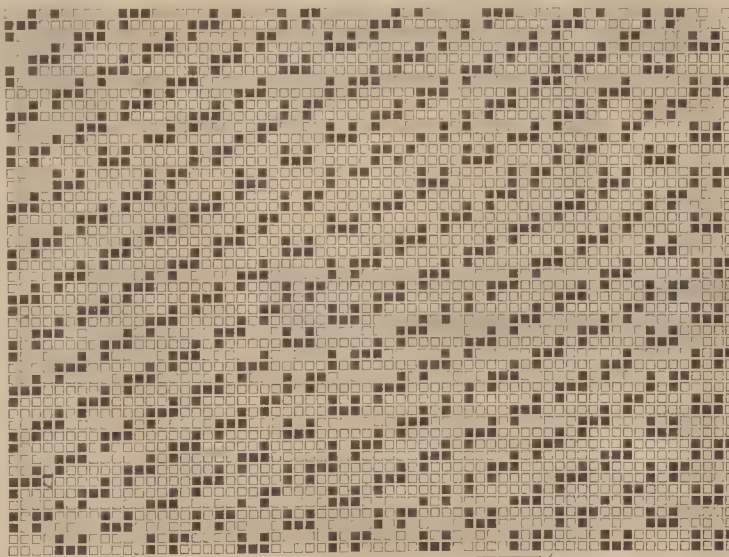
7,680 ends in warp ; 120 ends per inch : 15's reed, 8 ends in a reed ; 50 picks per inch ; 64 inches wide in loom ; 56 inches wide when finished.

Weight 10 ozs.

All 2/32's worsted.

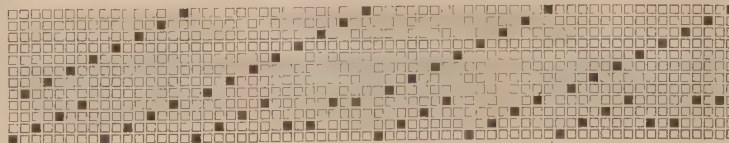
## Fancy Trousering.

4,480 ends in warp ; 70 ends per inch ; 8½'s reed, 8 ends in a reed ; 76 picks per inch ; 64 inches wide in loom ; 56 inches wide when finished. Weight 22 ozs.



Design.

3 times.

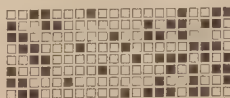


Draft.

3 times.

## Worsted Trousering.

No. 642.

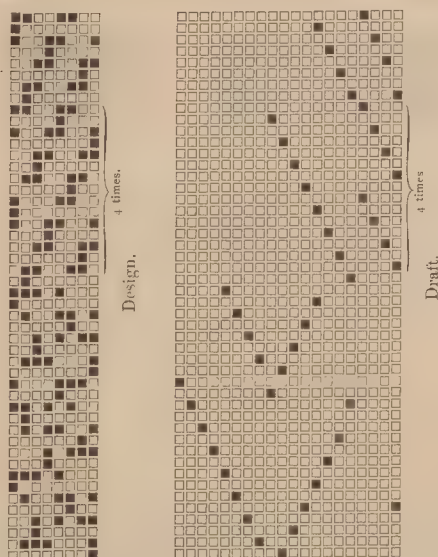


Pegging Plan.

7,168 ends in warp ; 112 ends per inch : 14's reed, 8 ends in a reed ; 60 picks per inch ; 64 inches wide in loom ; 56 inches wide when finished.

Weight 20 ozs.





Warp:—All Black, 2/32's worsted.

24	ends Black,	2/32's worsted.
10	" Lavender,	"
4	" Red and Black twist,	"
10	" Lavender,	"
24	" Black,	"
8	" Black and White twist,	"
8	" Lavender,	"
8	" Black and White twist,	"

96 ends in pattern.



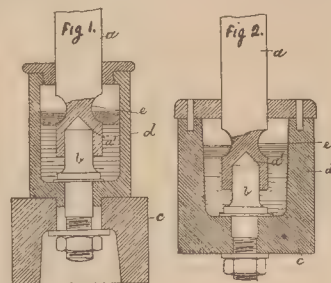
### MACHINERY, &C.

#### Machine for Twisting, Doubling, &c., Yarns and Threads.

A machine for the above purpose has been recently patented by Mr. T. Hall, of Bradley Mills, Huddersfield, in which there are some new features. It consists of an improved apparatus for enabling two, three, or more, yarns or threads to be twisted or doubled, and wound on to the ordinary reel at one operation, the object being to obviate the necessity of twisting or doubling such yarns upon an ordinary mule or twisting frame, thereby effecting a considerable saving of time, labour, and expense. In carrying out the invention, a number of spindles are mounted in a suitable position at the rear of the machine, the said spindles being driven by bevel gearing or other mechanism from any moving part of the machine, which mechanism is so arranged that the spindles may be driven at various speeds according to the number of times the yarns have to be twisted per given distance. The spindles are provided with a plate or disc carrying two, three, or more, pegs, on which the cops are placed, and a short distance above the cops is another plate or disc attached to the upper part of the spindle. This last named disc or plate is provided with eyelets or slits corresponding to the pegs on the lower disc or plate. The threads or yarns to be twisted together are drawn from each cop and passed through the eyelet or slit in the upper plate, corresponding to the pegs upon which each cop is placed; from thence they are passed through an eyelet upon an ordinary eyelet board, and through an eyelet on a reciprocating bar, and finally wound on to the reel. The rotation of the reel draws the yarn from the cops, whilst the rapid rotary action of the latter puts the required twist into the yarn before it is wound on to the reel. The speed at which the spindles are driven determines the number of twists per inch to be put into the yarn. By combining the apparatus for twisting yarns with an ordinary reeling machine, the patentee is enabled to twist two, three, or more, yarns together, and to reel the yarn so twisted at one operation, whereas, according to the present method, it is necessary to twist the yarns upon a mule or twisting frame, and then to transfer the twisted yarn to the reeling machine, whereby the cost of production is very considerable.

#### Improved Footstep Bearing for Spindles.

Spinning machine spindles, which work with a stepped journal or with a toe running in a footstep bearing, have the disadvantage of becoming worn out at the lower portion. The result of this is unsteady running, which readily gives rise to breakages of the thread or yarn. Further, the sinking of the spindles due to the wear causes "overspinning" or uneven filling of the bobbins. The present invention has for its object the obviating of these disadvantages, and the nature of the same is illustrated in two modifications in Figs. 1 and 2 of the annexed drawings. As will be seen from the drawings, the spindle *a* is recessed at the lower end at *a'*, and rests upon a pin or central pivot, *b*, which is bolted to the lower spindle beam or rail, *c*. Around this pin, *b*, and the recessed lower portion of the spindle, is arranged the oil container, *d*, which is closed with a cover, and which, when the spindles are very close together, is formed by the lower spindle rail, *c*, itself (Fig. 2), whilst, when the spindles are comparatively far apart, the oil container is constituted by a separate box or cup, *d*, fixed to the spindle rail, *c*, by means of the pin, *b*, (Fig. 1). Both the pin, *b*, and the spindle, *a*, are made of steel, and the parts that work upon one another are strongly hardened, so that exceedingly hard and smooth rubbing surfaces are formed, very much harder than those hitherto in use. Further, the rubbing surfaces are continually bathed with pure oil, because the arrangement of the spindle and the oil cup is such that the dirt resulting from the friction of the spindle and the pin



Improved Footstep Bearing for Spindles.

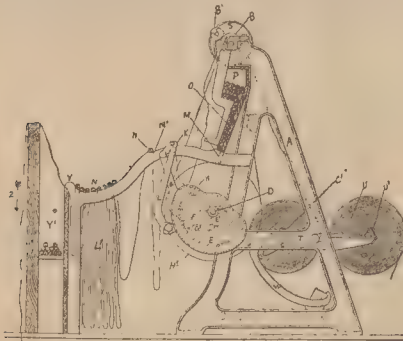
sinks at once to the bottom, whilst any dust that may penetrate into the lubricating vessel will float on the top of the oil. Dirt can, therefore, never come into contact with the rubbing surfaces. By the present arrangement of the footstep bearing, wear of the spindle is obviated in every way as far as possible. The spindle, will, therefore, always run steadily, and thus the collar bearing or neck bearing will be subject to less wear, so that breakages of the thread or yarn will be obviated as far as possible. Also, since the spindle cannot sink by reason of its exceedingly slight wear, "over spinning," that is to say, spinning of the thread on to the bobbin flanges, is completely obviated. It will be seen from the preceding that the improved arrangement of bearing renders possible not only lighter, but, also, steadier running of the spindle, which can, therefore, be made of less length than hitherto, so that not only is a saving in driving power effected but also, at the same time, greater speed and consequent increase in the turn-out are obtained. It may also be stated that, in the improved arrangement, one filling of the oil vessel is sufficient for many months, whilst the old oil is not lost but can be collected and cleansed. There is thus also a considerable saving of oil. In hardening thick spindles, it has been found that a small percentage of them become split at the junction of the hole or recess with the point. To obviate this splitting, a notch or groove, *e*, is formed, a small distance above the recess. Spindles provided with the said notches or grooves may be subjected to the strongest hardening without becoming split.

#### Measuring the Length of Fabrics in Rolls.

The object of this invention is to accomplish easily, quickly, and correctly, the measuring of carpets, oilcloths, cloth, and other goods made up in the form of a roll. To do this, a cord is carried in a case, and the case may, if desired, contain means for indicating the amount of cord, unwound, or the cord itself may be marked as by knots or otherwise to indicate the length. The cord may be carried on a drum inside the case, the drum or its spindle engaging in any desired manner with a train of wheels or other indicating mechanism which is arranged to operate index figures in a suitable portion of the case, protected by a glass front. The drum is with advantage controlled by a spring, so as to rewind the cord, and a suitable ratchet or brake mechanism may be provided for fixing the drum when required; the cord preferably passes out through a small tube in the case, this tube being so arranged that it can be passed in between the folds of the material in the roll. In using this invention, the apparatus may be held in one hand, and the projecting end of the cord secured or held by the finger to the outer edge of the roll of the material; the apparatus is then moved along the cord running out of the tube round the folds of the material, as the apparatus is moved; the long cord or nozzle being adapted, as already explained, to pass in between the folds of the cloth, so that the cord can be actually laid round the folds as if it had been rolled up with the material in the first instance. The tube or other portion of the case can be detachable or movable if desired.

### Improved Calender for Finishing Textile Fabrics.

This invention relates to a machine or apparatus by means of which continuous or endless running of textile fabrics through calenders during finishing processes, &c., is maintained, thereby adding greatly to the aggregate amount of work otherwise possible to be done—where the alternative is, for example, to pass each piece or batch of cloth by itself, or separately, through the calender, which, in such case, necessarily runs "empty" in the interval between the completion of the one and the introduction of every succeeding piece of fabric. The object of continuous or endless running is accomplished by causing, by the machine above referred to, an accumulation of the cloth, held in suspension and in advance, so to speak, of the calender, and placing the same in such a position as to be taken up conveniently and regularly by the calender, such accumulation affording to the employees or attendants sufficient time to attach or connect the last end of the cloth so held in reserve, and in course of being operated upon, to the first end of another piece of cloth, for similar treatment, and to be also in turn operated upon by the calender, and so on, in like manner with other pieces as long as the process of what is termed endless or continuous running may require to be continued with any lot or lots of cloth; the effect being that, during such time, there will be no "empty" running of the calender. In the accompanying drawing, A. A. represent the framework of the machine, having bearings carrying a pair of draw rollers, B. B'. Immediately under, or rather before, the rollers is a pair of brackets, C. C., which receive the pivots of the shaft or rod carrying the box, C', (so called in the trade) with the cloth upon it. D is the shaft upon which cams, E. E', are fixed. This shaft is driven by a strap from the draw roller, B. F are brackets fixed to the sides of the frame, and carry studs, upon which work the levers, G. G', motion being given them by the cams, E. E', acting upon the bowls H. H'. At the extremity of the levers, G. G., are swivel levers, K. These swivel levers are connected to the levers, G', by the rods, L, and are carried to the point, M to M', and from M' to M, as shown by the dotted lines, by the levers, G. At the point M, is a passage or guide, O, extending upwards, at the end of which passage or guide, O, is a chamber, P, of sufficient size to receive a number of rods, N, N, N. These rods may be of



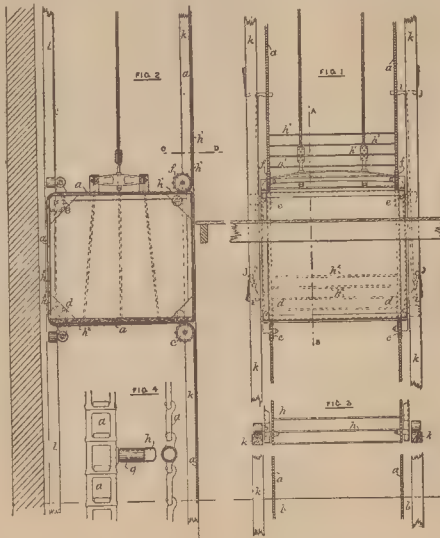
Improved Calender for Finishing Textile Fabrics.

iron, brass, or wood, and extend sufficiently across the framework. The object of the swivel levers is to carry the rods, N, N, one at a time, from the point M to the point M'. When the swivel levers, K, are at the point M, they are moved up at one end by the lever, G', by means of the rod, L, so that they embrace a rod, N, at each end, so as to enable them to draw the rod from the passage, O, and carry it forward to M'. The cams are suitably shaped so as to give the necessary motion to the levers. When one rod is being deposited at M', it throws the preceding one down the curved guides, which serve as carriers or supports to the rods as they drop down with the cloth hanging over them. The draw roller, B, is driven by a strap on the pulley, S, from the calender, and as soon as a certain fixed length of the cloth is delivered, the lowest rod in the passage, O, is drawn forward by the swivel levers, K, and deposited at the point M', and the cloth being still delivered by the rollers, "folds" over this rod, and when the regulated length is again reached, another rod is drawn out as before and carried forward, and the process repeated until one piece or batch of cloth is exhausted, when the machine is stopped, so as to enable the attendant to attach the last end to the first end of the next piece or batch. By this time, a sufficient accumulation of cloth has taken place, hanging in a series of folds, L', over the rods on the curved supports, so as to give the attendant sufficient time for the purpose before explained. As the calender takes up the cloth, the rods, N, when they have no longer any cloth over them, are drawn over the part, Y, and drop into the box Y'. The arrow, Z, represents the direction in which the cloth is passing to the calender. A further part of this invention is the arrangement for releasing the shaft or rod carrying the batch or box of cloth, now exhausted, from the brackets which, at each end, support it. It consists of two brackets, C, C, one at each side of the frame, each having bearings, somewhat like the three sides of a square, one of the three sides of each forming part of the lever, T, and can be lifted up so as to leave one side of each bearing clear or open. These levers, T, have at each end an incline, U. When it is desired to remove the empty box and replace it by a full one, the full one is pushed forward from the point U', and the pivots of the shaft carrying the full box coming against the two inclines, U, on the levers, T, lift the ends forming one of the three sides of each bearing, which hitherto secured the pivots of the box when being

operated upon. The full box is thus forced forward against the empty one, and throws it out of the bearing now open. Under each bracket, C, C, are curved arms, W, in position to receive the dropping box and deposit it in a position for the attendant to pick up conveniently.

### Newsome, Sons, and Speddings' Patent Automatic Hoist Gates.

In the building of new factories, &c., a strong point is generally made of an efficient hoist system to reduce the risk of accidents, and one of the latest is exhibited at the Leeds Exhibition by Messrs. Newsome, Sons, and Speddings, Anchor Foundry, Dewsbury. Its essential features consist of hoist gates which move automatically, are noiseless in working, and simple in construction; their liability to get out of order is reduced to a minimum, and they require no attention. The annexed drawings show—Fig. 1—a front elevation, and Fig. 2—a side or sectional elevation. On the line A, B, Fig. 1 and Fig. 3 is a plan on the section line, C, D, Fig. 2, of a warehouse hoist. The cage of the hoist is shown just passing one of the floors of the warehouse. This invention consists of a flexible metal guard, A, A, attached at its lower ends to the bottom of the hoist shaft at B, B, and at its upper ends to the top of the hoist shaft. This guard is formed of link or pitch chains, A, A, (shewn to a larger scale in Fig. 4) which are stretched close to the front and over the full depth of the hoist shaft, except on that portion immediately in front of the cage, where, instead, the chains are made to pass beneath the floor of the cage upwards, behind, and close to the cage, and along the top as shewn in Fig. 2, being guided in this direction by the pitch wheels lettered C, D, E and F, attached to the eight corners of the cage. Several of the links of each chain are provided with side pins, G, (see Fig. 4) to which are attached the ends of long rods or



Patent Automatic Hoist Gates.

tubes H, such rods or tubes reaching across to, and similarly attached to, corresponding links on the opposite chain. The cross rods or tubes, H, which form the actual protection or guard, may be attached at a suitable distance apart over the whole length of the chains, A, A, or, as shown in the drawing, only over those portions necessary to keep the shaft guarded to a height of from 3 to 5 feet above the floor of each storey. In this latter case, two sets of cross bars, H, H, are required for each floor served by the hoist, the one set, H', H', guarding the shaft when the top of the cage is below the floor of the storey, and the other set, H'', H'', when the bottom of the cage is above the floor. In order to avoid any possibility of the guard being pushed back any great distance from the front of the shaft, a set of hinged supports or stops, I, are provided, automatically operated by the motion of the cage. This is shown in Fig. 1. The stops, I, are hinged at J, in the front pair of hoist conductors K, K, both above and below the floor of the storey, those above being attached respectively to those below by long rods or links, the connection being such that whenever the upper supports stand out horizontally, the lower supports or stops are inclined nearly vertical, and *vice versa*. When the stops, I, are turned out in a horizontal position, they come close to, and behind, the chains, A, A, preventing the latter being pushed far back from the front of the hoist. The cage, when being raised, catches against the upper set of stops, and pushes them back clear, at the same time raising the lower pair to a horizontal position. In its descent, the cage catches the lower stops, causing a reverse motion. The hoist can be seen at work by applying to the makers at the above address.



### Edge's Patent Card Grinding Apparatus.

The revolving flat carding engine has superseded all others, and yet spinners are aware that considerable difficulty exists in maintaining an evenness in the wear of the ends of the flats, the grinding of which has been hitherto imperfect. It is not our intention to enter upon a long dissertation upon the grinding of flats, as spinners generally are fully conversant with the subject in all its bearings, but we desire to draw attention to an improved apparatus for the purpose, made by Mr. S. Brooks, Union Iron Works, West Gorton, Manchester, and, in doing so, we need not expend words in praise of the manner in which the mechanism successfully performs its work, as the testimonials received by the maker from such firms as Messrs. Rylands and Sons, Limited, who, after experimenting with the apparatus for several months, are now applying it to the whole of their cards in their Gorton Mills, after having placed it at their other factories, testify to its utility. The following description and illustrations, taken from the patentee's specification, will be readily understood. The grinding

ground. The under surface of plate, I, is double inclined, this being the pith of the invention. The surfaces are inclined one in each direction, from a point marked I, placed about half an inch in front of the centre of the grinding roller. The flats approach at an incline of about  $2\frac{1}{2}^\circ$ , and recede at about  $1\frac{1}{2}^\circ$ , which forms an angle of about  $176^\circ$  at point I. In perfect grinding, it is necessary that each row of wires should be presented with their bases at an equal distance from the centre of the grinding roller. In this invention, the inclination of the surfaces, on their passage, must be adjusted to correspond with the inclination of the flats. The method of having the card wire surface of the flats to travel in a plain at right angles to a radial line from the centre of the grinding roller is, therefore, effectually overcome. The lower part of the bracket, E, at its upper edge, forms an inclined guide, J, over which the flats pass successively, the back of the flat at the point c, where it is curved to receive the link stud, resting upon it. A specially raised surface, j, is formed for a short space upon, and near the centre of, this guide. This lifts each flat, as it passes, into contact with the grinding roller. Provision is made for raising the grinding roller clear of the flats when not required in use, a bayonet joint being formed by the pin, h,

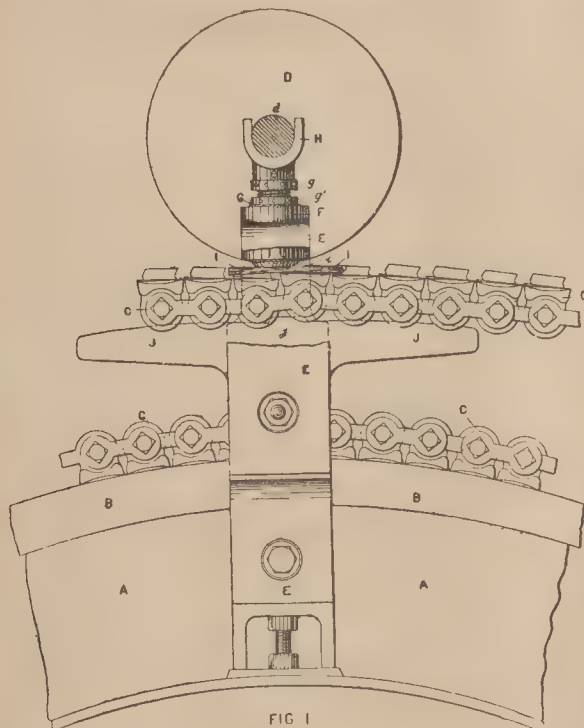


FIG 1

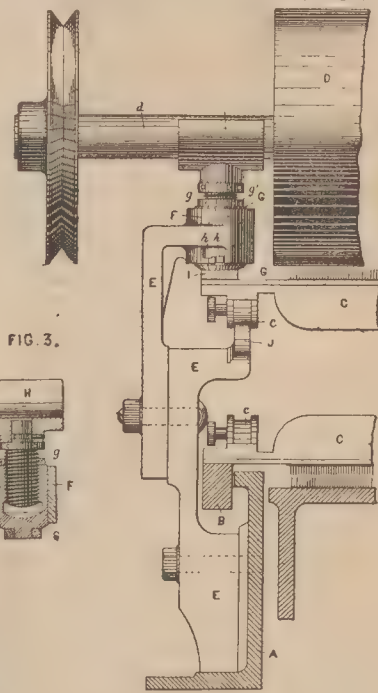
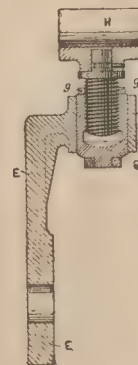


FIG 2

FIG 3.



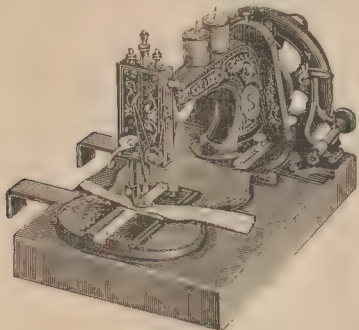
#### Patent Improved Card Grinding Apparatus.

roller is so mounted at the ends that, during the operation of grinding, the vertically moving stud or bracket, which carries the bearing for the roller shaft, is supported upon the working surface of the flats. Each flat, as it passes beneath the grinding roller, is adjusted to the required angle against the under surface of the above-mentioned bracket, which is inclined to form an internal angle of from  $170^\circ$  to  $176^\circ$ . Fig. 1 is a portion of the front elevation; Fig. 2, side elevation with parts in section; and Fig. 3, sectional side elevation of the upright bracket and vertical sliding stud. The parts shown are the bend, A, the flexible bend, B, several flats, C, the grinding roller, D, and the bracket, E, and other details that will appear in the description. The grinding roller, D, is supported by the adjustable bracket, E, bolted to the bend, A. This bracket is formed in two parts secured to each other, the lower part to sustain and lift up the flats, C, as they pass forward to the ground; the upper part to support the grinding roller and regulate its position in relation to the flats when being ground. In the upper part, a socket, F, is formed, which receives a sliding stud, G, upon which the journal of the grinding roller, d, is carried. The stud, G, is formed of two parts, the outer one of which slides in the socket, F, and the inner stud, G. The latter screws into the sliding stud, G, and when arranged at the proper height is locked in its position by the nut, g. The stud, g, projects into the shank of the journal, and can be screwed to receive a nut to regulate the height and fit into the slide. The lower end of the stud, G, projects through the socket, F, and is fitted with plate, I, against which the working surfaces of the flats come in contact as they are being

being lifted into the slot h'. The movements, when the card is in operation, are as follow:—The flats travel their usual course. As they approach the grinding roller, they move up the inclined guide, J; on nearing the centre of the guide, they mount upon the raised surface j, which brings their working surfaces into contact with the inclined surfaces of the plate, I. The several parts having been properly adjusted, each flat as it passes between the guide surface and plate, I, must be raised, and so cause the weight of the grinding roller to bear against the working surface of the flats. The distance between the working surface of each flat and the grinding roller must be equal, and the grinding of the flats all alike, as all the wires are ground to a uniform length with a level surface. The illustration shows the apparatus as applied working with an ordinary dead roller, but another patent has also been taken out for use with the Horsfall traversing roller. The apparatus is likewise constructed to be interchangeable from one card to another, if desired, and the operation occupies only a few minutes' time; and further, the invention can be applied to either new or existing revolving flat cards of any make. Mr. S. Brooks is the sole maker of the Wilkinson patent card, the working surfaces of the flat ends of which cannot wear, as they rest upon, and revolve with, a wheel or disc placed on each side of the cylinder. On this account, the concentricity of the wires of the cylinder and flats is far less likely to be disturbed than in other cards. It is recognised, however, that the apparatus illustrated, when applied to the Wilkinson card, will still further minimise the possibility of evil arising through either defective or irregular grinding, or from any other cause.

### Sellers' Tape Sewing Machine for Spinning Frames.

Spinners, generally, know the utility of having the tapes of spinning frames fixed in a workable manner and in such a way that they do not take away from the frames any of their efficiency; they will, therefore, welcome a machine that has been brought before our notice by Messrs. William Sellers and Sons, sewing and knitting machine makers, Keighley, which has been designed specially for the purpose of sewing the tapes upon spinning frames of various kinds. The makers of this apparatus have studied the matter, and have brought a thoroughly practical knowledge to bear in making the mechanism in every respect capable of doing the work that is claimed for it. The machine is so balanced that, whether it is hung from, or run alongside, the spinning frame when sewing, it does its work effectively without any straining of the needles or other parts of the machine.



The illustration gives a view of the apparatus, with hangers for the purpose of suspending it to the spinning frame, but it can also be fixed upon a stool or buffet having wheels, and can be run alongside the frame. Both methods have their advantages, and, in ordering, spinners can have either or both. The system of sewing can be seen from the engraving, from which it will be noticed that there are

no more parts of the mechanism to get out of order when working than there are in any ordinary sewing machine, the apparatus being of a thoroughly stable character. Any description of thread for stitching the tapes can be used, and linen thread as coarse as No. 30 is specially adapted for the purpose. The economy effected by using these machines will be appreciated by spinners. Messrs. Sellers and Sons inform us that a large number have already been sold, and that many repeat orders have been received, and this is not to be wondered at, when the low price at which they are offered, and the saving in expense by their use, are taken into account. The makers will be pleased to give all particulars of the machine on application.

### The Shipley Technical Schools.

Little more than a year has elapsed since the above schools instituted textile classes, yet, short as the time has been, much has already been done to ensure the firm foundation of a school which shall be an active unit in the trade of Shipley, near Bradford, and its district. Owing to the generosity of various firms in the neighbouring district, practical work of a varied character is now taught in the schools. As usual, the first to stretch out a helping hand towards the institution struggling into existence was the Worshipful Company of Clothworkers of the City of London, who generously promised an annual donation towards the working expenses. Immediately following the formation of the classes came a promise from Mr. George Hodgson, the eminent loom maker, of one of their Paris Exhibition looms. Upon the return of the loom from the exhibition, an intimation was received that two looms would be given. One of these is a tappet loom for four shafts, with 32 inch reed space. This loom is beautifully finished, and was, as an experiment, run in the Paris Exhibition at 450 picks per minute. Gauze weaving will be effected in this loom. The second of the looms under consideration, however, claims most notice. It is a four box loom, 24 shafts and 76 inch reed space. The boxes are actuated by a series of levers, simple and compact, and it is not too much to say that if the making of pattern chains and the thorough realization of this motion were the only attributes derived from this loom, it would still be a valuable addition to the teaching apparatus of any textile schools. The shedding motion is equally interesting, and the arrangements for levelling the shed, reversing, throwing the engine out of gear, &c., place the loom in the front rank as an efficient worker. A worsted warp, close set, is at present in the loom, and the way in which the work is done gives every satisfaction. Another addition to the shed is a tappet loom from Messrs. J. Leeming and Sons, North Vale Works, Bradford. This is, at present, engaged on a cotton warp cashmere, and is found very useful for experimenting in coloured stripes. A machine for teaching the higher branches of textile design is a 300 jacquard, given by Mr. A. Flather, of Bradford. This is beautifully finished off, and is a credit to the maker. The power is supplied by means of a gas engine made by Mr. John Robson, Shipley. It is in part a gift, and does its work in a way which leaves little to be desired. The necessary shafting has been given by Mr. Robert Hird, Cromwell Foundry, Shipley; the pulleys by Messrs. Croft and Perkins, of Bradford; the whole of the leather belting by Messrs. J. White and Sons, Park Road Leather Works, Bingley; lubricators by Messrs. Taylor and Parsons, Bradford; a number of patent metallic slide lags and pins by Mr. Kershaw Jowett, Bradford. A case of templates by Fairfax

Oddy, also a donation, is placed in the museum. In addition to the above gifts, various hand looms with wickets ranging from 24 to 48 shafts have been purchased, and are used entirely for experimental weaving. The first classes were commenced in September, 1888, six students entering the course of lectures on "The Preparatory Processes," and 25 the weaving and designing class. 21 of these students sat in the City and Guilds of London examination in "cloth manufacture, ordinary grade." In the "preparatory processes" all passed, gaining the first and third medals, while in the "weaving and designing," the first medal was gained and 87 per cent. passed. This session, 11 entered the "preparatory processes" class, 31 the "elementary weaving," and 15 the "advanced weaving" classes, making in all 57 students. The course of study has been illustrated throughout by means of the lime light, and the great interest manifested by the students indicates that the establishment of these classes meets a special requirement of the district. Mr. Alfred F. Barker, Hon. Secretary of the Yorkshire College Textile Society, is the instructor.



### Personal and Trade Notes.

Dens Road Works, Dundee, containing 280 power looms, have been sold, and will be started with about 300 hands.

Mr. John H. Shaw, of the firm of Greenhalgh and Shaw, cotton spinners, Hallowell, died at his residence, a few days ago, at the age of 34 years.

Mr. Wilhelm Hedemann, of Langerfeld, near Barmen, has recently patented a lace plaiting machine, which, in view of the growing popularity of laces, would seem to be of much importance, inasmuch as it produces the lace cheaper than can be done by hand.

Mr. Herbert Emsley, Designer, 35, Swaine Street, Bradford, has an oil painting supposed to be by W. E. Frost, R.A., of the "Goddess Diana and her Nymphs Bathing." The picture is a beautiful work of art, and measures 5ft. x 3ft. 6ins. Mr. Emsley will be glad to show it to anyone, as it is on sale.

Mr. Edward Cope, lace manufacturer, Nottingham, having refused to pay his income tax, a large quantity of his yarn was seized by the Inland Revenue authorities and sold by auction the other day. There was a large attendance of local merchants and traders, who publicly thanked Mr. Cope for the action he had taken.

More cotton spinning companies have been formed. The Pine Spinning Company has been registered with a capital of £100,000 in 1,000 shares of £100 each. The Elm Spinning Company has also been registered with a capital of £70,000 in £10 shares. The Earl Mill Company has been formed with a capital of £80,000 in £100 shares.

Two separate correspondents, writing to the *Nottingham Guardian*, suggest a lace exhibition as the best method of reviving that industry. Lace manufacturers should give the proposal their best consideration, as there is no doubt an exhibition, whether in London or Nottingham, would have the effect of preventing some of the trade in lace going abroad.

In April, the exports of silk yarns from the Bradford Consular district to the United States were of the declared value of £4,044 5s. 3d., being an increase in the value of the exports in April, 1889, of no less than £3,263 3s., but the exports of plushes, &c., last month only amounted in value to £34,969 11s. 4d., against £38,591 18s. 2d., in April last year.

The Rothwell Hosiery Company, Bolton, have under contemplation an extension of their business, and to meet this, the capital will be increased from £100,000 to £200,000, a portion being offered to the public. The company are effecting extensive alterations at the mills in Bridgeman-street, where they will do their own wool-spinning and make their own machinery.

The Kerr Thread Company have accepted the plans for a new thread mill, to be built at Fall River, Mass., to cost \$100,000. This new mill will be separate as a corporation from the extensive works of Messrs. Kerr, in Paisley, Scotland. It is proposed to import, for the present, the yarn from Paisley, and wind it at Newark, N. J., where the company has a large factory.

Inspectorships of factories are to be assigned after competitive examinations. Candidates must have a fair education, a thorough knowledge, both theoretical and practical, of all matters connected with an inspector's duties, and some intimacy with sanitation. His examination will cover all past legislation for the supervision of factories, and he must know every detail of all existing factory acts.

The second annual meeting of Messrs. B. Vickerman and Sons, Limited, Huddersfield, was held a few days since. The report shows a profit of £23,365 19s. 10d. for the year. A dividend equal to nine per cent. per annum was declared on ordinary shares, and six per cent. on preference shares. A balance of £7,010 10s. 6d. was added to the reserve fund, which now amounts to over £16,000.

The medals and diplomas awarded at the Universal Exhibition will not be ready for distribution in the order of groups and classes until September next. The awards to foreign exhibitors will be forwarded through the intermediary of the various embassies and legations as the distribution proceeds, and in accordance with the understanding arrived at between the foreign Commissioners and the Director General of the Exhibition.

The proposals which have been made and discussed for a short time past in regard to forming a conciliation board to settle disputes between employers and operatives in the cotton spinning trade were submitted to a meeting of the United Cotton Spinners Association, held recently. There is now every likelihood of immediate steps being taken to create some board of appeal, that will be able to settle disputes without strikes having to be resorted to.





## PATENTS.

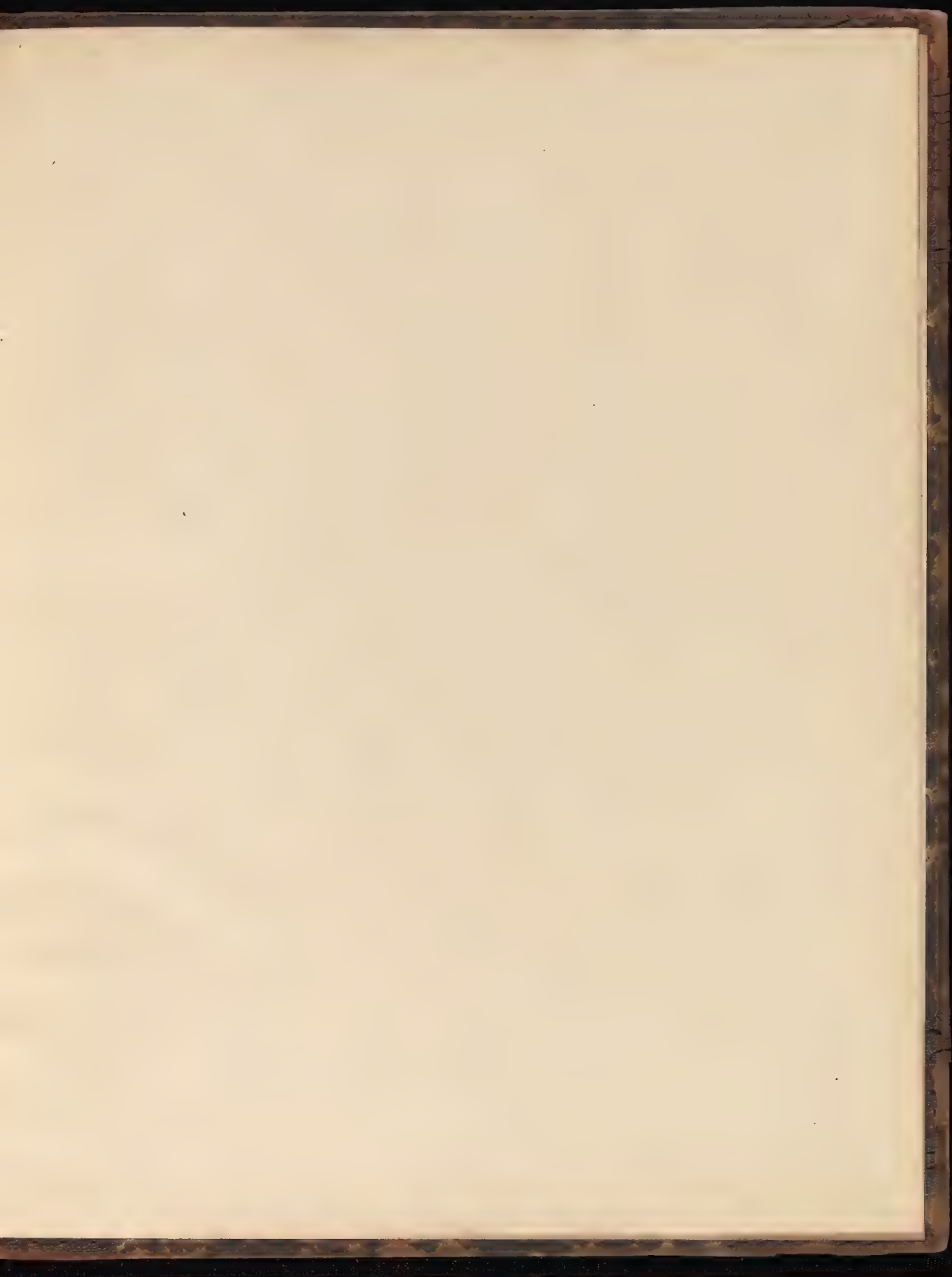
### Applications for Letters Patent.

Belts for stretching fabrics during drying or finishing. J. H. Wilby, London.	28th Apl.	6,505
Belts (driving) and method of joining. J. H. Wilby, London.	28th Apl.	6,504
Bleaching fibres in hanks. R. T. Webb, Newtonards.	30th Apl.	6,512
Bleaching fibres. W. H. Spencer, London.	8th May	7,198
Colouring matters. C. Dreyfus, London.	1st May	6,729
Colouring matters. J. Y. Johnson, London.	3rd May	6,874
Carpets (pile). F. B. Fawcett, Kidderminster.	29th Apl.	6,540
Carpet fabrics. W. B. Keefer, London.	3rd May	6,879
Colouring matters. H. H. Lake, London.	3rd May	6,879
Cards. F. Fleming, Halifax.	6th May	6,982
Carding machines. A. Rivret and H. H. Colston, London.	10th May	7,274
Cutting lace threads. W. E. Heys, Manchester.	16th May	7,621
Cards. W. Hemingway, Manchester.	20th May	7,229
Carding machines. S. Lederer and J. Dlouhy, London.	28rd May	8,080
Colours. J. Hall, London.	27th May	8,215
Cocoons, beating. Serrall Reeling Co., London.	28th May	8,297
Colours. J. Y. Johnson, London.	28th May	8,303
Colours. A. Remy, R. Kramer and W. Herking, London.	30th May	8,349
Dyeing velvets, &c. W. H. Booth, London.	28th Apl.	6,506
Driving gear of carding engine calendar, &c. G. and E. and R. Ashworth, Manchester.	1st May	6,686
Drying fabrics. J. Bridge, Accrington.	6th May	6,941
Dyeing wool. P. Cavilles, London.	8th May	7,202
Driving bands. C. Gaul and T. Wolstenholme, Bradford.	9th May	7,221
Decorating fibres. J. Longmore and W. L. Watson, Liverpool.	12th May	7,389 and 7,390
Designs. W. Elbers, London.	14th May	7,522
Doubling machines. J. P. Bayley, London.	14th May	7,545
Designs. H. A. McColl, Glasgow.	20th May	7,841
Dyeing, &c. E. and D. Sykes, Halifax.	24th May	8,134
Dyeing. J. Bell, Glasgow.	27th May	8,238
Decorating. P. P. Faure, London.	29th May	8,346
Drawing, twisting, &c. R. Ingham and J. B. Moorhouse, Keighley.	31st May	8,430
Embroidered fabrics. R. N. Havers, G. W. Harwin and L. N. Havers, London.	6th May	7,051
Feeds for fibres. H. Lees, London.	7th May	7,088
Felted fabrics. H. Clement, London.	28th May	8,259
Hearth-rugs and machinery. G. Marsden, London.	1st May	6,732
Jacquard machines. J. and T. Wilkinson, Bradford.	8th May	7,154
Jacquard machines. J. Sugden and W. Hardaker, Halifax.	14th May	7,472
Jacquards. M. Tuquet, M. Boudard and C. H. Crawley, London.	27th May	8,221
Jacquards. S. Hillas, Morley.	30th May	8,424
Knitting warp fabrics. T. and J. and J. W. Kiddier, London.	6th May	7,052
Knitting machines. H. Kiddier, London.	12th May	7,369
Knitting jackets, &c. W. Laugham, London.	12th May	7,393
Knitting. W. H. Hoyle, London.	30th May	8,367
Looms. J. and E. Holden, Chorley.	28th Apl.	6,415
Lace (duplex). T. Butler, Nottingham.	30th Apl.	6,613
Looms (loose-reed). W. Birtwistle, Manchester.	1st May	6,697
Looms. J. Farran and F. C. Crawford, Manchester.	2nd May	6,750
Lace. R. Scott, Nottingham.	2nd May	6,770
Lace. C. Détre and J. K. Fletcher, London.	3rd May	6,871
Looms. F. Scholes and T. Walkden, Manchester.	5th May	6,908
Looms. C. Schuler, London.	6th May	7,049
Looms. H. B. Morris, London.	6th May	7,051
Looms. J. W. Shorrook, J. K. Hacking and J. Feilden, London.	10th May	7,279
Looms. J. Fairburn, London.	15th May	7,559
Looms. B. F. Ford, London.	15th May	7,594

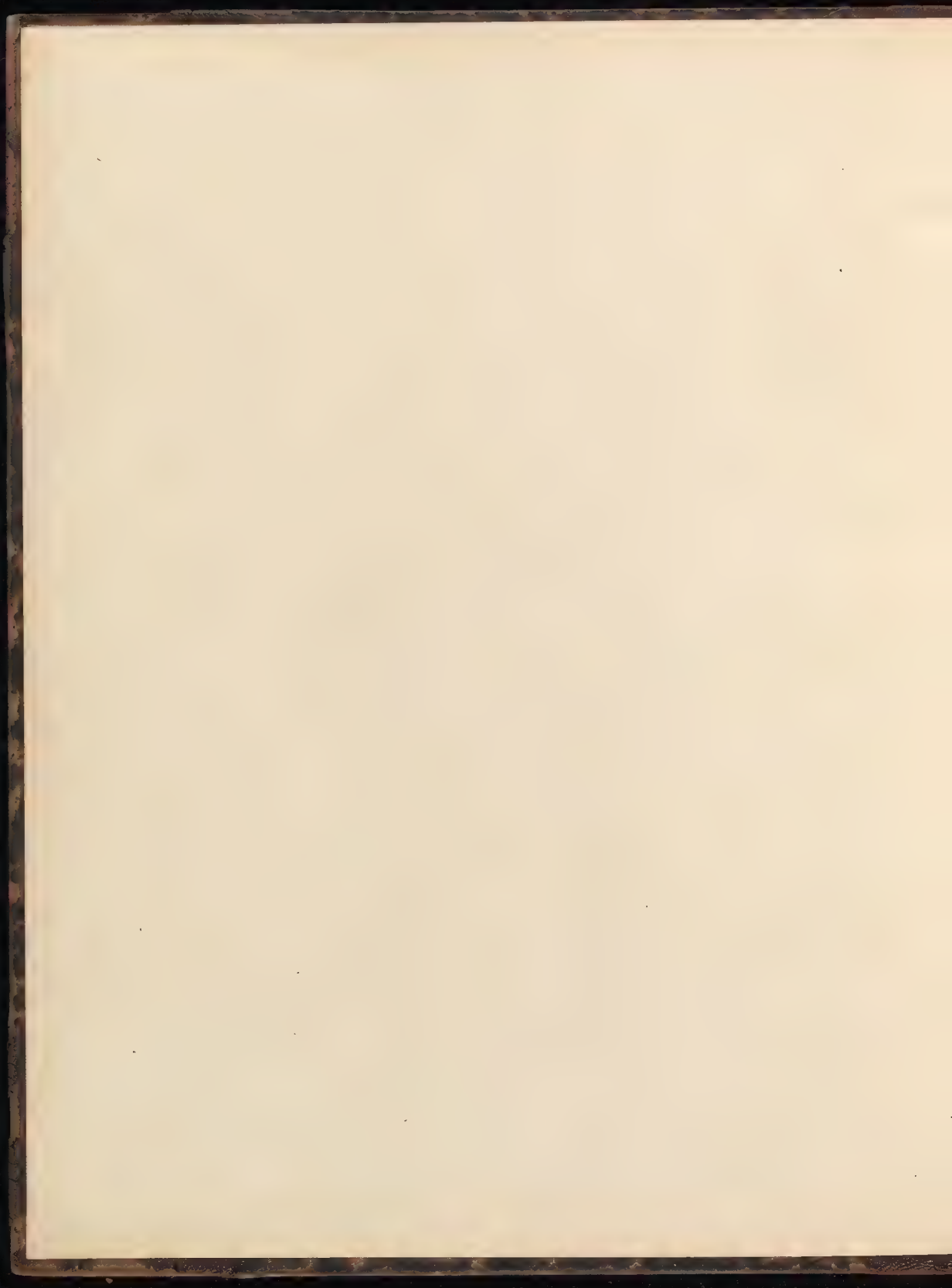
Looms. F. Baynes, J. E. Topping and J. Whitaker, Halifax.	16th May	7,640
Looms. J. H. Bury and J. Booth, Halifax.	16th May	7,643
Looms. O. S. Hall, Manchester.	22nd May	7,904
Lace thread. A. Acton, Nottingham.	22nd May	7,914
Looms. E. W. Cooper, Birmingham.	23rd May	8,061
Looms. H. Livesey and T. Gill, Manchester.	24th May	8,154
Looms. A. E. Walker and T. Greenwood, Huddersfield.	27th May	8,211
Looms. E. Fielding, Manchester.	31st May	8,443
Mules. W. Bradbury, Oldham.	7th May	7,147
Mules. S. Hall, Manchester.	30th May	8,359
Opening fibres. J. A. London, Newcastle-on-Tyne.	5th May	6,903
Opening machines. J. Dunn, J. W. Pateson, W. Riley and J. Wilding, London.	6th May	6,991
Pile fabrics. T. M. Pullan, Diss.	6th May	6,976
Preventing breakage of picking sticks. I. S. Lodge and G. Littlewood, London.	7th May	7,100
Printing patterns on fabrics. E. Kaiser, London.	10th May	7,210
Pile knives. O. Drey, Manchester.	13th May	7,398
Preparing threads, &c. W. Peters, London.	13th May	7,423
Pickers. J. Walton, Halifax.	19th May	7,705
Pressing fabrics. G. Douglas, Bradford.	22nd May	7,919
Pressing fabrics. W. Becroft, London.	24th May	8,177
Preparing cocoons. Serrall Reeling Co., London.	28th May	8,296
Rollers for printing fabrics. W. L. Hare, London.	1st May	6,708
Rag breaking machines. T. Popplewall, Batley.	9th May	7,214
Stoker. C. Tsochope, Manchester.	28th Apl.	6,424
Spinning machinery. G. Brown, London.	29th Apl.	6,512
Stitching loops of cotton warve bands. W. Elliott, London.	29th Apl.	6,525
Smoke prevention. T. Thornley, Manchester.	1st May	6,692
Shearing pile fabrics. T. R. Kay and R. C. Young, Bradford.	1st May	6,702
Separation of greasy matters from wool wash water. C. W. Kimmins and T. Craig, London.	1st May	6,706
Spinning and roving. H. E. Gatenby, Leeds.	2nd May	6,745
Salvage holders for finishing and stretching machines. E. Ohi, London.	2nd May	6,794
Smoke prevention and consuming. J. Ashworth and W. Kenn, London.	3rd May	6,876
Spinning machines. W. P. Thompson, Liverpool.	6th May	7,029
Spinning machines. W. Westley, London.	7th May	7,095
Scutchers. S. Crossley, Manchester.	16th May	7,627
Shearing fabrics. T. R. Kay and R. C. Young, Bradford.	17th May	7,708
Sealskin frames. C. Longbottom, Bradford.	22nd May	7,917
Spinning. E. and E. Meunier, London.	22nd May	7,980
Selvages. W. Simpson and S. Smart, Manchester.	23rd May	8,056
Spindles. W. Sumner, Manchester.	23rd May	8,066
Sizing. J. Tattersall, Halifax.	24th May	8,130
Sealskin frames. T. W. Harding, Leeds.	24th May	8,133
Scouring fabrics. C. V. Roche, London.	24th May	8,180
Smoke consumers. J. Moss, London.	28th May	8,275
Separating textile fibres. E. Knecht, Bradford.	31st May	8,152
Tension pulleys of spinning, &c., machines. J. Smith, Keighley.	28th Apl.	6,445
Taking threads out of laps. J. W. Leach and H. H. Sinkinson, Leeds.	30th May	8,387
Ventilating and impregnating the atmosphere of weaving sheds, &c., with moisture. W. C. Wood and W. Bracewell, Chorley.	28th Apl.	6,434
Winding yarns. T. Rivett, Manchester.	10th May	7,324
Winding yarns. R. McConnell, Belfast.	27th May	8,205
Washing, dyeing, &c. E. and G. E. Sutcliffe, Manchester.	28th May	8,270
Warp baling. J. Hurlley, London.	31st May	8,429
Warp knitting. A. Paget, Loughborough.	31st May	8,432
Waterproof fabrics. T. Birnbaum, London.	23rd May	8,072
Yarn guide traverse motions. J. Thorpe, Manchester.	30th Apl.	6,603

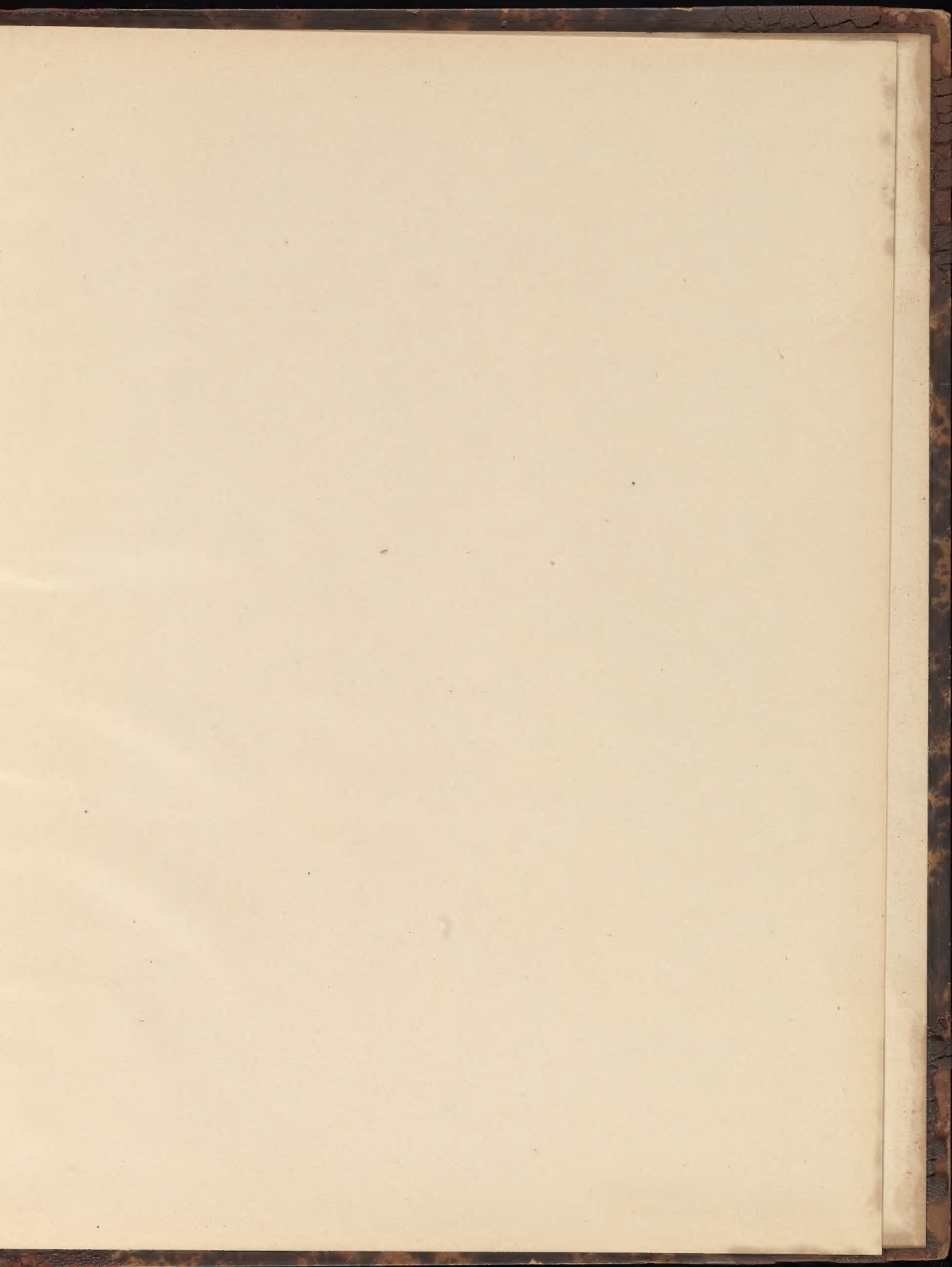
### Patents Sealed.

12,909	3,544	6,258	6,621	6,706	6,717	6,798	7,487
7,550	8,237	2,084	5,120	5,590	6,434	6,905	6,978
7,021	7,024	7,123	7,399	7,821	8,153	8,154	10,861
20,325	1,446	2,000	4,467	5,687	6,684	6,718	7,238
7,439	9,432	11,380	18,034	20,167	1,505	4,840	5,813
6,765	7,031	7,167	7,290	7,953	7,967	8,009	8,205
8,291	10,024	14,874	17,454	18,145	18,229	2,112	2,301
5,501	6,723	8,253	8,407	8,410	8,413	8,571	2,614











2016-S340

